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ABSTRACT

To identify variables which inhibit social and academic adjustment, 42 kindergarten students were studied longitudinally by means of parent interviews, observation, tests, and anecdotal records. The IQ score for the group remained normal to slightly above over the 8-year period, but individual scores tended to vary more with increased age. Underachieving students in reading were compared to their achieving classmates; in grade 3 there was a significant difference between the two groups on the level of discouragement. By sixth grade the underachievers exhibited a less desirable social adjustment and participated less in class discussions. Short attention span and sensitivity about weight and speech were recurring characteristics of underachievers. The feeling of having a place among his peers and being assured of it, and a feeling of personal worth and appreciation were the only variables that continued to correlate consistently with the child's overall academic accomplishment throughout the first nine years of school. Additional results, conclusions, and suggestions are reported. (RJ)

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Development of Criteria for the Identification of Pre-School Children with Learning Problems

Manford A. Sonstegard
Meng-shu Tseng

West Virginia University
Morgantown, West Virginia

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CHAPTER I

INTRODUCTION

Children with learning difficulties comprise a significant proportion of the school population. A survey conducted by the American Personnel and Guidance Association in 1961 indicated that the proportion of pupils who perform below their estimated level of ability ranges from 5 to 25 percent. A survey of Wisconsin and Michigan elementary schools (Jordan, 1957) estimated the percentage of pupils who needed psychological attention at 19 percent of the population. Of these, 10 percent or approximately two percent of the school population were incapacitated to such an extent as to need extensive psychiatric treatment.

Excluding pupils with physiological or mental defects, two main categories of unsuccessful pupils have been identified: (1) those who, because of lack of motivation,are underachievers, and (2) those who, having difficulty finding their place in school, are disruptive. In the former class, pupils have been included who appear unable to achieve at expected levels. Their limited achievement is most frequently attributed to insufficient drive, need, or desire to succeed. In the latter category have been included pupils who are dissatisfied with themselves, parents, teachers, and other significant adults. Also, included in this category are children with records of chronic truancy, uncooperativeness, lack of discipline, and destructive feelings against themselves or others.

Parental manners of interaction with their children have

been explored by psychological and sociological research. Frankiel (1958), after a careful review of the literature, concluded that parental submissiveness, lack of sound discipline, yielding to the child's demands, and excessive generosity in providing material objects, have resulted in the careless, irresponsible, disobedient, and disorderly behavior of children. Such children were found to have difficulty in school.

One of the most important adjustments children have to make is the mastery of skills that the school deems essential. Gilbert (1957), examining the problems of children who were referred to metropolitan child guidance centers, found that "the most frequently offered reason for referral was academic difficulties." Adjustment to school work and performance of the basic academic skills seem to be related in a circular way. Successful children are rewarded and therfore encouraged to spend more and more time in wholesome school activities that they enjoy. These children are reinforced by both outside rewards and inner satisfactions, are proud of their school achievement, have friendly attitudes toward the school and its values, and enjoy the satisfaction of a good job that is well done. Conversely, children who are unsuccessful in academic endeavors are scarcely rewarded, if rewarded at all, entertain negative attitudes toward the school and its values, perceive themselves as inferior, find it difficult to establish friendly relationships with their peers, and are deprived of the inner satisfaction that accompanies the satisfactory performance of a worthwhile task.

Bills (1950) placed emotionally disturbed children in play situations in which some of the emotional conflicts were avoided, reduced, or eliminated. He observed that the experimental children gained substantially in mental functioning and increased their school achievement. Also, Godfarb (1947) and Skodak (1943), among many others, found that social and emotional conflicts had a significant effect on the IQ scores of children.

Buswell (1953) found that in kindergarten where academic values are not stressed, both future achievers and underachievers were equally chosen by their peers in social and play activities. First graders, however, considering achievement in school important, tended to choose successful pupils as playmates more frequently than unsuccessful ones. Buswell's results seem to indicate that achievement in school precedes rather than follows social adjustment.

Jastack (1946) administered individually a battery of achievement tests and found large discrepancies between the results of the reading and the arithmetic tests among adults with emotional or mental problems. Replicating his study in children, he found that neurotic and disorganized children tended to be more proficient in reading than in arithmetic. He also observed that low achievement in arithmetic may result from entirely different causes. It seems that the study of mathematics demands more concentration and more freedom from anxiety and inner conflict than does reading.

Bower (1958) differentiated between emotionally disturbed

boys and girls. He concluded that boys with emotional problems showed greater dissatisfaction with selves than boys without such problems. Generally, boys were discontent with both their performance and with school. Girls, on the other hand, did not revolt as much as boys against school, but their difficulties resulted from poor relationships within the family. This result may be due either to differential awareness between boys and girls or to socially imposed norms for each sex.

Numerous studies, (see, for example, Rogers (1951), Snygg and Combs (1949), Sullivan (1947), among others) have explored the relation between a person's self concept and his behavior. The findings of these studies revealed that the main determinant of behavior was the manner in which each person perceived that physical or biological characteristics and social or cultural rules affected him personally. Whether his perceptions were realistic or unrealistic made no difference.

Bower (1958), using a "Thinking About Yourself" game, found a significant correlation between real and ideal self among children. He concluded that the measures of self and ideal self, when properly used, could provide information about cases of personality maladjustment. He also observed that the majority of children fell in the average range, very few being completely satisfied or completely dissatisfied with selves. "Children with good reality testing usually feel comfortable about themselves and their future. Children

who are disturbed may be hesitant to express a wanted self different from self or may express a wanted self greatly different from self."

Other investigators have dealt with the problem of family structure. Baldwin (1945), for example, has reported a significant increase in IQ among children whose mothers believed in democratic ideals. Becker (1959) found that children with behavioral problems came from families in which both parents were maladjusted. The parents were found to lack emotional control and tended to be arbitrary with the children. The mothers of conduct-problem children were proven to be impulsive, dictatorial, thwarting, and suggesting, whereas the fathers tended not to enforce the regulations.

According to the principles of Individual Psychology, non-achievement is a symptom of social disorientation. Every child strives to find his place in his social group, and the underachiever has been unable to find his place in the school group. Inability of a child to find his place among peers stems from his inability to find his place in the family group, the first group to which the human being belongs (Dreikurs and Grey, 1968)

The manner in which the members of the family group interact with the child, determines the extent to which he feels assured of a place in the group. The family group, or family constellation, and especially the parents' method of interacting with the child, is the basis of the child's adequacy of performance outside the family group. The crucial

factor in the individual's ability to fulfill his duties is the attitude which he adopts toward his environment and toward other people (Dreikurs 1964, Dinkmeyer and Dreikurs 1963).

Children who have difficulty finding their place within groups may begin to develop negative attitudes about themselves. If a child has the attitude that others are superior to him, his inferior feelings about himself begin to be reflected in his behavior. While this inferiority may exist only in the child's imagination, he strives for personal significance in trying to counterbalance the alleged superiority of others (Adler 1963, Dreikurs and Grey 1968).

A child may compensate for his feelings of uncertainty and inferiority by pursuing fictitious goals, such as: (Dreikurs 1950)

1. The fictitious Attention-Getting Mechanism.

   Prevented from gaining status through constructive means, the child seeks confirmation of his acceptance by trying to make himself the center of attraction and to keep others busy in his service.

2. Power.

   Efforts to control the child lead to a deadlock in a struggle for power and superiority between the child and adults.

3. Revenge.

   The child no longer hopes merely for attention or even power; feeling ostracized, he can see his place in the group by retaliation and by his success in making himself hated.

4. Withdrawal

A child who is passive or whose antagonism is successfully beaten down may be hiding behind a display of real or imagined inferiority.

"A human being's fictitious goals and the guiding lines by which he hopes to reach his goals remain unchanged throughout his life as long as they are not disclosed by unusually penetrating self knowledge . . . an apparently spontaneous change of character may occasionally be observed, but if it was not due to the exercise of an unusual degree of insight, but to external influences, such as change of environment, it generally proves to have been superficial . . . . This explains why every individual by the time he is four to six years old has developed a definite character (Dreikurs, 1950)."

The foregoing review contains only a small portion of the substantial body of research in the area of child development and family relations. In summary, such research has shown that certain types of parental maladjustment, inappropriate methods of discipline, undesirable attitudes, and conflicting social interactions occur concomitantly with various inauspicious patterns of children's behavior. Since the methods of parental interaction with the child play a very important role in determining the patterns of the child's behavior, it is desirable to identify early those children who may develop learning problems; by such an identification the parents of these children can be helped to change patterns of behavior and interactions which have been found harmful or detrimental to academic growth.

The primary objective of this research was to establish baseline criteria for identification of preschool children with learning problems and to define these criteria in observable terms. The next step would logically be to present corrective approaches for parents, teachers and counselors to use in redirecting those children who pursue fictitious goals.

REVIEW OF RELATED RESEARCH

Selected research related to the study in its initial stages has been reviewed above. The last decade has not produced extensive research related to the identification of children with learning problems. The isolation of factors relating to academic success or failure proves to be complex. Furthermore, the cost of extensive longitudinal studies discourages this type of research. As a result, very few adequate predictors of school achievement have been found. Low reading ability has been shown to be a direct cause of dropping out of school (Hawthorne, 1969). Since poor reading ability has such a strong influence in underachievement, its causes must be studied. Silverman, et. al. (1959) studies 35 students whose median IQ was 104, but whose reading retardation in eighth grade was from one to eight years. He found reading problems to be associated with severe anxiety, depressive trends, hyperactivity, fearfulness, and excessive daydreaming. Frequently the child had not attended Kindergarten and had frequent changes in schools or teachers through the years. Often there was only one parent active in the family. Distrubed

mother-child relationships involving toilet training and feeding were characteristic. Often the parents had had a traumatic childhood, marital discord, and put undue pressure on the child to achieve academically. In general, the world became a dangerous place for the child.

Abrams (1956) reported that non-readers have difficulty maintaining sustained abstract attention as a direct result of anxiety. He said his twenty-five 8-12 year olds showed more symptoms of insecurity, irritability, poor home and school adjustment, impulsiveness and inability to respond appropriately to emotional stimuli. Carithers (1967) also found an association between emotional problems in the first grade and word knowledge, word discrimination and reading disability. However, in 1959 Wilson tested 1083 third grade students and found no correlation between those who had low reading, spelling, or arithmetic achievement and those who scored below 10% on the California Test of Personality.

There are several studies that associate specific factors with low reading achievement. Harte (1967) found that highly anxious males in an institutional school in New York did not read as well as highly defensive males. Highly anxious girls read better than highly anxious boys. Mayans (1967) found that there were significant differences in reading achievement between the culturally advantaged, and the disadvantaged.

Specific needs and press were identified by Norman and Daley (1959) as relating to inferior readers. From the California Test of Personality they found presses of poor readers

to include poor family interaction, rejection by others, frustration, aggression by others, conflicts about others dominance, and environmental deprivation. Characteristics of slow readers include impulsiveness, rejection of others, aggression towards others, and general inferiority feelings. Leibman (1954) also found that the self-and social- adjustment scores on the California Test of Personality differentiated between high and low achievers.

Yeager (1966) could find no pattern between learning rate and ability to read and work mathematical problems. It was also found that children who learn to read in Kindergarten do not do significantly better in reading later on; the only exception occurs in brighter readers who tend to stay ahead of the others (Hoppock, 1967).

Not all studies of under-achievement relate to reading problems. Many associate learning problems directly with personal characteristics of the child. Klausmeier (1958) attempted to predict achievement with organismic age. He tested third and fifth graders on height, weight strength of grip, number of teeth, bone development of hand and wrist, mental ages as derived from the California Test of Mental Maturity, and achievement in reading, arithmetic and language. He found they correlated very little with one another. However, Rubenstein (1959) was able to correlate moderate obesity, marked orality, and poor physical coordination with learning impotence.

In a three-year longitudinal study, de Hirsh (1967) tested Kindergarten students in behavior control, mobility

patterning, fine manual coordination, human figure drawing, visumotor organization, comprehension and use of oral language and reading readiness. Those students who were second grade failures had a primitive and undifferentiated CNS level in Kindergarten; they were high in dependency needs and showed late ego development. Others studies also relate chronological age to achievement. The Gesell Institute (Ames, 1968) found that nearly every child referred there because of school disability was overplaced in school by one, sometimes two, years. In nearly every case the child's behavioral age was below his chronological age and thus below the level of maturity required for successful school performance. This led them to the proposal that it should be a child's behavioral age (his maturity level) rather than his chronological age or his IQ which should determine the time of school entrance or promotion. A child may have good learning potential, but fail because the work expected of him is out of phase with his current level of maturity. Therefore, he develops a failure identity.

Laura Weinstein (1968-9) confirms that children viewed as disturbed by their schools were shown to have entered first grade younger than their classmates. The academic deficit throughout the twelve years of school. Younger children are more restless, less able to concentrate or follow directions, and can't meet the teacher's expectations. Thus they develop a failure identity and see school as a negative experience.

Loughlin (1966) and Lindemann (1967) both reported that the emotional age rather than chronological age was correlated with learning problems.

IQ has been a natural source of study involving underachievers. Smith (1967) reported that IQ was the most important factor in predicting growth. However those who were unrealistic about their prior acceptance (both over and underestimating) did less well in school, which may reflect a lack of self-confidence. Almerda (1969) reported that with 180 third grade Catholic students the underachieving boys scored lowest on intelligence. However, underachieving girls were lowest in self-control and emotional stability, but highest in dominance and seriousness. On the other hand, Scott (1965) reported that school success cannot be predicted from mental tests alone. Edwards (1964) found only a .5 correlation between IQ scores and achievement. The index of forecasting achievement was only 13%.

Keller (1924) found significant correlations between school achievement and IQ. Most correlations between achievement and anxiety were negative. He postulated that high anxiety may tend to correlate negatively with school achievement because of interference with effective test-taking behavior.

The need for achievement has been studied as having an influence on actual achievement. However, Shaw (1961) could find no correlation between school achievement and need achievement in high school students. Bull (1966) found that underachievers set lower goals for themselves than achievers rather than setting unrealistically high goals that might end in failure. Frequently, though, the goals set did not

influence actual achievement. Douvan (1956) divided twelth grade middle and working-class children into two groups. One group was told "they were expected to do well" on a task. The other group was told they would each get $10.00 if they did well. In the first group the middle class children performed significantly better on the task. In the second group, the working class children performed better than middle class subjects, although both middle class and working-class children in the second group performed better than group one. Douvan concludes that educational motivation and perhaps motivation in general should be made more concrete or tangible for lower-class than for middle-class children. "Their academic consciences are not so well built in."

In a review of the literature, Holt (1945) found that subjects lacking in the ability to make friends or adapt to the requirements of social living tend to exhibit the most extreme levels of aspiration to bolster their ego. McClelland, Atkinson, Clark, and Lowell, (1953) suggested that achievement is related to self concept. Opportunities for mastery must be developed in the academic environment. If there is too much stress on the academic, the subject develops a negative outlook, if there is too little, he becomes bored. Campbell (1966) and Ozehosky (1967) also found significant correlations between self-concept and achievement in all grades. Campbell reported that the relationship between self-concept and achievement is more pronounced for boys than for girls. Ozehosky found no correlation between

birth order and achievement. Farley (1967) reports that there was no difference between birth and grade average in college students. However, Oberlander and Jenkins (1966) found that the intense parent-child interactions and verbal proclivity produce children who show relative superiority in academic pursuits.

Self-concept has been found to correlate positively with achievement in many cases. Randall (1967) studied the characteristics of drop-outs and found that grade scores were one whole point lower, achievement and IQ scores were lower, and reading ability was lower. Dropouts participated less in school activities, were absent three times more often, had repeated at least one grade, had fathers who performed unskilled jobs and had a history of family instability.

Generally, the dropout had a feeling of failure which began in elementary school. Randall suggests providing additional reading facilities and involving the parents. Matlin (1965) found that adjustment was strongly related to teacher's grades but not to scores on the standardized tests. He concluded that personality variables may indirectly affect school grades at this level (5th grade) because teachers tend to base their grades on adjustment as well as accomplishment.

Other studies show different characteristics. Rubenstein (1959) found learning impotence correlated with low frustration tolerance, marked orality, distorted mother-child relationships, pseudo-delinquent behavior and poor relationships with peers and adults. Dudeck, (1969) in a study that gave no specifics, reported a correlation between high personality deficits and high achievement, so there is evidence that low self-concept does not cause underachievement. Wass (1969)

classified 195 4th-8th graders as high, typical, or low achievers on a deviation from the mean achievement score. He found overachievement related to aggressiveness, assertiveness, some self-esteem and also to teachers' evaluation of the student's anxiety and motivation. He concluded that the matter is very complex. Academic excellence doesn't prelude a subject's need for help in psycho-social matters, but an underachiever does not need to have psycho-social problems.

Silverman (1969) also found that apathetic and withdrawn students measured lower in achievement, while angry and defiant subjects did not have problems in achievement. He studied 103 students in day care centers who were rated by their teachers, and later the ratings were compared with achievement in first grade. However, he stressed that the angry and defiant children were more likely to receive help since their problems were more obvious.

Leibman (1954) studied fifth grade students and reported that achievers were generally more "adjusted" but not significantly so. Conflict around aggression and expression and inhibition might be an important factor in many learning difficulties, reported Ross (1967). He emphasizes that "treatment must address itself to the problem which disrupts learning and if effective therapeutic intervention can take place soon after onset so that adequate functioning can be restored quickly, the child should be able to continue his academic endeavors without requiring special tutoring."

Social factors have also been studied for their influence in predicting underachievement. Many studies have found a close relationship between cultural deprivation and underachievement. Vane (1966) studied achievement of Negro and White suburban students and found high positive correlations between intellect and achievement and socioeconomic status as measured by parent's occupation. Shaw and McCuen (1960) studied achievers and underachievers in California and showed that male underachievers tended to receive lower grades than achievers beginning with grade one. Scott (1965) hypothesized that basic deprivation permeates the culture of lower class subjects and may deter cognitive growth. Low need satisfaction may retard need heirarchy, hence retarding abstracting ability. He found that his disadvantaged subjects, who were all blacks, differed widely in IQ levels as compared with advantaged subjects. Eisenberg (1969) wrote that lower-class subjects come to school lacking the language skills and general academic experience and attitudes, and therefore tend to develop a sense of failure. Mayans (1967) suggested that grouping Kindergarten students according to fathers' occupational levels and education assures homogeneous groups in reading ability.

Nursery school attendance prepared working-class children better in Staten Island (Goldstein, 1966). However by the 2nd or 3rd grade the non-preschoolers had caught up in logical reasoning and nonlanguage intelligence. Loughlin (1966) reported that early entrance in Kindergarten won't

cause first grade achievement and adjustment problems.

Family maladjustment has been shown to have an influence on underachievement (Leibman, 1954 and Frank, 1967). Fletcher (1967) found that high achievement in children relates to the mother's social values: that is, when the parents favor "private effort, personal goals, etc." Difference between mothers' and teachers' social values based on liberal or conservative position did not affect achievement. However, Fletcher did not mention the size or composition of his sample. Currie (1967), on the other hand, could find no statistical difference between the value orientation patterns of the parents and academically successful or unsuccessful children.

There was also no statistically significant difference between children from united and broken homes in Texas with regard to school readiness, reading achievement, arithmetic achievement, and sociometric status or withdrawn maladjustment.

Fetters (1969) found several characteristics differentiating between schools with many over or underachievers. The schools with more underachieving students have the following characteristics: little parental interest, poor supplies, small libraries, larger classes, and fewer art and music classes (though they are more likely to have a glee club or chorus). Such schools were in economically and socially disadvantaged areas, had poor reputations and had three times more nonwhite teachers (47% to 16%). The students didn't try as hard, had lower abilities, often lacked interest in school, and thus became discipline problems or were frequently absent.

Ross (1967) concludes that learning difficulties of children are too complex to assign to the child. Individually, one should examine what we are trying to teach and the manner in which we teach it. The child who has difficulties with his school work perhaps has a disrupting influence on his home and family, conversely, the home perhaps has a disruptive influence on his school work.

Chapter II
Procedures

This longitudinal study was designed to study child behavior in the school for the purpose of identifying variables which inhibit social and academic adjustment. The subjects were 42 kindergarten students who, during the 1960 school year, attended the Malcolm Price Laboratory School, University of Northern Iowa, Waterloo, Iowa. Facets of the study included interviewing the parents of each child, observing the children in the classroom, administering tests, and maintaining anecdotal records.

Structured tape recorded interviews were conducted with the parents of all subjects. The interviews consisted of the following basic questions (see Appendix A) about the child: How would you describe your child? What are his relationships with siblings? Do relatives, friends, or neighbors have influence over his behavior? If so, what do you do about it? In what ways does he stand out? Describe his daily routine from getting up in the morning until he goes to bed. Describe his social relationships with other adults, peers, relatives, pets, teachers, and authority figures. What does the child want to do in the future? Interviews were conducted during the 1960-61 school year and were repeated during the 1969-1970 school session.

Three authorities in child guidance and child development, two psychologists, and a psychiatrist, observed the children in the school situation for one entire day during their kindergarten experience and again during the first grade. These observers assessed each child's ability to take initiative and responsibility, his interpersonal relationships, and the nature of his emotional expressiveness. The kindergarten and first grade teachers were also asked to record their impression of each child using similar criteria.

Tests were administered intermittently throughout the study period. The SRA Mental Abilities, Metropolitan Reading Readiness Test, and the Scotts-Foresman Preprimary Achievement Test were administered during the kindergarten year. While attending the first grade, each child was given the Scotts-Foresman Primary Achievement Test and the California Personality Inventory. The California Test of Mental Maturity was administered in 1963 during the subjects' third school year. The Iowa Every Pupil Test of Basic Skills was administered during the fourth and sixth grades while the Sequential Test of Education Progress was given during the seventh grade. A socio-metric test, The California Personality Inventory and the Iowa Test of Educational Development were administered during the 1968-70 school terms (see Appendex B).

In addition to interview data, test results and observations and anecdotal records were kept on each subject. This information was assessed along with all of the other information for each subject.

The Personality Factor Questionnaire (16 PF) form C (Institute for Personality and Ability Testing, 1956) was administered in 1970 as were the following:

a. Perceived Parent Attitude Scale (see Appendix C)

b. In School Screening of Children with Emotional Problems (Bower, 1962)
   1. Teacher Rating (Behavior Rating of Pupils)
   2. Peer Rating (Class pictures and student survey)
   3. Self Rating (A picture game and a self-test)

c. California Test of Personality

d. Familism Scale (see Appendix D)

e. The Family Scale (see Appendix E)

f. The Specialists Rating Scale (see Appendix F)

In summary, the investigators interviewed the parents of each subject, observed the subjects in the classroom setting, collected anecdotal records and previous test scores and administered standardized and sociometric tests.

Statistical Treatment of Data

To present the characteristics of the subjects -- their scholastic aptitude; academic achievement in reading, arithmetic, basic skills, and educational development; and personality attributes as measured by standardized tests -- descriptive statistics for data reduction and organization were used. Descriptive indices utilized were the mean, standard deviation, range, and product-moment correlation coefficient.

For the purpose of assessing the characteristics of underachieving in reading, spelling, arithmetic, and composite basic skills, the one-way analysis of variance technique was used with the underachievers and others as two levels of an independent variable. The dependent variables investigated, in this connection, included seventeen ratings of the subjects' preschool behaviors by a group of specialists.

One-way variance analyses were also conducted to compare subjects who expressed subject-matter difficulty and those who did not (at grade 10) on scholastic aptititude, educational achievement and development, personality factors, self-concept, perceived parents' attitudes, and teachers' ratings of the subjects' behaviors.

Correlational analyses were conducted to examine the subjects preschool and first grade attributes as determinants of their educational achievement and development. The product-moment correlation was used for the purpose of identifying significant correlates of educational achievement and development in the preschool and first grade attributes.

CHAPTER III

RESULTS

A. Some Group Characteristics of the Subjects (Grade 1 through 10)

The subjects' scholastic aptitude, academic achievement, and personality attribures longitudinally measured by standardized tests during the ten-year time span are presented in this section.

A-1 Scholastic Aptitude

The scholastic aptitude of subjects was assessed at the first, third, fifth, sixth, and eighth grade levels by the SRA Mental Maturity Test, the California Test of Mental Maturity, the Henmon-Nelson Tests of Mental Ability, the Otis Quick-Scoring Mental Ability Tests, and the Kuhlmann-Anderson Intelligence Tests. The means, standard deviations, and ranges of the total IQs are given in Table I.

TABLE I

MEANS, STANDARD DEVIATIONS, AND RANGES OF SCHOLASTIC APTITUDE

		IQ		
GRADE LEVEL		MEAN	S.D.	RANGE
1	(SRA)	110.0	8.4	83-124
3	(CTMN)	118.0	12.6	94-137
5	(H-N)	113.6	11.7	93-134
6	(Otis)	113.0	10.7	95-136
8	(K-A)	114.7	12.1	90-146

As can be seen in the table, these subjects as a group had an average level of intelligence, with rather stable mean IQs which ranged from 110 to 118 over an eight-year period. An examination of standard deviations and ranges reveals that these subjects were more homogeneous in the first grade and that there was a trend for the IQs to disperse over time.

To examine the relationships of IQs between grade levels, correlational analyses were conducted. Table 2 summarizes the results.

TABLE 2

INTERCORRELATIONS BETWEEN GRADE LEVELS ON SCHOLASTIC APTITUDE

GRADE	1	3	5	6	8
1	___				
3	.73** (n=33)	___			
5	.71** (n=33)	.66** (n=34)	___		
6	.75** (n=28)	.50* (n=29)	.82** (n=29)	___	
8	.58* (n=28)	.64** (n=30)	.70** (n=29)	.74** (n=26)	___

* $P < .01$
** $P < .001$

All the ten product-moment correlation coefficients are significant beyond the .05 level.

A-2 Academic Achievement

The subjects' achievement was measured at the second, third, fourth, fifth, sixth, seventh, and eighth grade levels with the California Achievement Tests and the Iowa Tests of Basic Skills. The CAT was administered in November 1961 and September 1962, and the IBS was administered in January 1964, January 1965, January 1966, January 1967, and January 1968. The expected average achievement in grade equivalence at these administration points would, therefore, be placed at 2.2, 3.0, 4.4, 5.4, 6.4, 7.4, and 8.4, respectively. The findings presented below are organized in three general areas of achievement; reading, arithmetic, and basic skills.

A-2-a Reading

The means, standard deviations, and ranges (in grade equivalence) of total reading performance of the subjects during the period grades 2-8 are shown in Table 3.

The mean reading levels of the subjects were consistantly higher than their expected mean grade levels throughout the seven-year period that was covered in the study. The mean reading levels over the expected mean grade levels were found to be in the magnitude of from 0.1 grades (at the seventh grade, 7.5-7.4) to 1.2 grades (at the second grade 3.4-2.2).

The subjects also showed an above average achievement on vocabulary during the same period, as can be seen in Table 4.

TABLE 3

MEANS, STANDARD DEVIATIONS, AND RANGES OF READING ACHIEVEMENT

	READING		
GRADE LEVEL	MEAN G.E.	S.D.	RANGE
2 (CAT)	3.4	0.8	2.3-4.5
3 (CAT)	4.3	1.2	1.5-6.0
4 (IBS)	4.8	1.4	2.1-7.7
5 (IBS)	5.9	1.5	3.3-8.5
6 (IBS)	6.6	1.6	3.5-9.0
7 (IBS)	7.5	1.2	5.4-9.5
8 (IBS)	8.7	1.7	5.5-11.5

TABLE 4

MEANS, STANDARD DEVIATIONS, AND RANGES OF VOCABULARY

	VOCABULARY		
GRADE LEVEL	MEAN G.E.	S.D.	RANGES
2 (CAT)	3.8	0.8	2.4-5.0
3. (CAT)	4.1	1.2	1.7-6.0
4 (IBS)	4.7	1.5	1.7-6.9
5 (IBS)	5.7	1.6	2.8-8.1
6 (IBS)	6.7	1.7	3.2-10.3
7 (IBS)	7.6	1.8	4.2-10.4
8 (IBS)	8.8	1.8	5.3-12.6

The mean vocabulary levels over the actual grade levels ranged from 0.2 grades (at the seventh grade 7.6-7.4) to 1.6 grades (at the second grade 3.8-2.2)

As to achievement in spelling and language, the subjects as a group had an above average performance at the second, third, and fourth grade levels, and below average performance at the fifth, sixth, seventh, and eighth grade levels. Tables 5 and 6 summarizes the findings.

TABLE 5

MEANS, STANDARD DEVIATIONS, AND RANGES OF SPELLING

	SPELLING		
GRADE LEVEL	MEAN G.E.	S.D.	RANGE
2 (CAT)	2.8	1.1	1.4-5.0
3 (CAT)	3.6	1.3	1.3-6.0
4 (IBS)	4.6	1.6	1.9-7.3
5 (IBS)	5.2	1.6	2.3-8.1
6 (IBS)	6.1	1.9	2.6-9.7
7 (IBS)	7.1	2.2	3.2-10.8
8 (IBS)	7.7	2.4	3.3-12.2

TABLE 6

MEANS, STANDARD DEVIATIONS, AND RANGES OF LANGUAGE

	LANGUAGE		
GRADE LEVEL	MEAN G.R.	S.D.	RANGE
2 (CAT)	2.9	0.8	1.8-4.4
3 (CAT)	3.8	0.9	2.4-5.7
4 (IBS)	4.5	1.2	2.3-6.8
5 (IBS)	5.2	1.2	3.2-7.2
6 (IBS)	6.2	1.5	3.4-8.9
7 (IBS)	6.8	1.7	4.0-10.2
8 (IBS)	7.8	2.0	3.9-11.9

The mean achievement levels on punctuation as measured by the IBS were 4.3, 5.0, 5.9, 6.7, and 7.9 grades at the fourth, fifth, sixth, seventh, and eighth grades, respectively. The mean performances on capitalization as measured by the same instrument were found to be 4.0, 4.8, 5.8, 6.3, and 7.5 grade levels at grade fourth, fifth, sixth, seventh, and eighth, respectively. In other words, the subjects as a group demonstrated a below average level of achievement on punctuation and capitalization throughout the five-year span.

A-2-b Arithmetic

The subjects' overall arithmetic achievement during the period from grade 2 through grade 8 was as follows (table 7):

TABLE 7

MEANS, STANDARD DEVIATIONS AND RANGES OF ARITHMETIC ACHIEVEMENT

	ARITHMETIC ACHIEVEMENT		
GRADE LEVEL	MEAN G.E.	S.D.	RANGES
2 (CAT)	3.1	0.7	2.4-4.3
3 (CAT)	3.9	0.5	2.8-4.7
4 (IBS)	4.5	1.0	2.8-6.4
5 (IBS)	5.2	1.0	3.4-7.1
6 (IBS)	6.3	1.1	4.4-8.7
7 (IBS)	7.1	1.4	4.3-10.4
8 (IBS)	8.2	1.4	5.0-12.0

The mean arithmetic achievement of this group was above average at grades second, third, and fourth, with the achievement level higher that the expected mean grade level by 0.9 (3.1-2.2), 0.9 (3.9-3.0) and 0.1 (4.5-4.4) grades, respectively. The mean arithmetic achievement level of these subjects at grades fifth, sixth, seventh, and eighth, however, was below the expected mean grade level.

As to the group achievement on the arithmetic reasoning and arithmetic fundamentals, as measured by the CAT, at grades second and third, the achievement level exceeds the expected mean grade level by nearly one whole grade or more. The mean arithmetic reasoning levels were 3.3 grades at grade 2 and 3.9 grades at grade 3. The mean arithmetic fundamentals levels were 3.1 and 3.7 grades at grades 2 and 3, respectively.

The subjects showed generally an above average achievement relative to arithmetic concepts, as measured by the IBS, during the period from grade 4 through grade 8. The mean arithmetic concepts levels at grades 4, 5, 6, 7, and 8 were 4.5, 5.5, 6.4, 7.1 and 8.5 grades, respectively.

With regard to the group achievement on arithmetic problems, their performance was found to be generally a below average one. The mean achievement on arithmetic problems as measured by the IBS, at grades 4, 5, 6, 7, and 8 were 4.5, 4.9, 6.1, 7.3, and 8.0 grades, respectively.

A-2-C Basic Skills

The subjects demonstrated an above average achievement in basic skills as measured by the IBS. The achievement level was equal to and above the actual grade level during the period from grade 4 through 8. Table 8 summarizes the findings. At grade 4, achievement exceeded ex-ected performance by 0.3 grades (4.7-4.4). At grades 5, 6, and 8, achievement exceeded expected performance by 0.1 grades. The subjects performance of 7.4 was exactly at the expected mean grade level at grade 7.

The subjects' work-study skills during the same period were also measured by the IBS. Results, as shown in Table 9, indicate that their achievement level was higher than the expected grade level by nearly one half of a grade.

TABLE 8

MEANS AND STANDARD DEVIATIONS OF BASIC SKILLS

	BASIC SKILLS	
GRADE LEVEL	MEAN G.E.	S.D.
4 (IBS)	4.7	1.1
5 (IBS)	5.6	1.1
6 (IBS)	6.5	1.3
7 (IBS)	7.4	1.3
8 (IBS)	8.5	1.4

TABLE 9

MEANS AND STANDARD DEVIATIONS OF WORK-STUDY SKILLS

	WORK-STUDY SKILLS	
GRADE LEVEL	MEAN G.E.	S.D.
4 (IBS)	4.9	1.1
5 (IBS)	5.8	1.2
6 (IBS)	6.7	1.8
7 (IBS)	7.8	1.4
8 (IBS)	8.8	1.5

An examination of the aspects of work-study skills in terms of the use of maps, the use of graphs, and the use of references shows the same tendency cutting across all the three sub-skills. The mean achievement levels on the use of maps at grades 4, 5, 6, 7, and 8 were found to be 4.8, 5.8, 7.0, 7.5, and 8.7 grades, respectively. The mean achievement levels concerning the use of graphs during the same period were 5.0 (at grade 4), 5.7 (at grade 5), 7.1 (at grade 6),8.0 (at grade 7), and 9.1 (at grade 8) grades. The mean achievement levels of the use of references were 4.8, 5.7, 6.6, 7.9, and 8.7 grades at grades 4, 5, 6, 7, and 8, respectively.

A-3 Personality

Personality attributes of the subjects were measured with the California Test of Personality at the first and fourth grade levels and with the Sixteen Personality Factor Questionnaire at the tenth grade level.

Table 10 presents the means and standard deviations of the fifteen personality characteristics yielded by the CTP at grades 1 and 4.

The figures in the table are in percentile. If the median-split method is used to describe a given personality attribute as either high or low in relation to the norm established by the CTP, the following statements can be made. The subjects as a group showed high total adjustment at grades 1 and 4 with the means of 54.8 and 51.3, respectively. Both self adjustment (the composite of self reliance, sense of personal worth, sense of personal freedom, feeling

TABLE 10

MEANS AND STANDARD DEVIATIONS (IN PERCENTILE) OF PERSONALITY ATTRIBUTES AS MEASURED BY THE CTP

PERSONALITY	GRADE ONE		GRADE FOUR	
	MEAN	SD	MEAN	SD
Self Reliance	51.0	23.2	57.8	24.3
Personal Worth	65.7	24.4	51.9	26.9
Personal Freedom	55.2	15.7	49.4	24.6
Feeling of Belonging	68.1	20.9	55.9	32.1
Withdrawing Tendency	50.0	21.7	59.2	32.1
Nervous Symptons	43.3	19.3	60.6	31.0
Social Standards	57.7	25.8	56.3	22.8
Social Skills	57.1	22.2	55.6	30.6
Anti-social Tendency	58.1	26.2	38.6	31.3
Family Relations	58.6	27.3	46.3	17.5
School Relations	68.1	19.1	64.1	24.2
Community Relations	64.8	26.4	45.6	15.5
Self Adjustment	50.5	15.0	48.6	27.7
Social Adjustment	59.3	25.0	49.7	20.9
Total Adjustment	54.8	17.2	51.3	21.3

of belonging, withdrawing tendencies, and nervous symptoms) and social adjustment (the composite of social standards, social skills, anti-social tendencies, family relations, school relations, and community relations) were high at grade 1, with the means of 50.5 and 59.3, but low at grade 4, with the means of 48.6 and 49.7, respectively. The subjects showed consistently high tendency at grades 1 and 4 with regard to school relations (68.1, 64.1), feeling of belonging (68.1, 55.9), sense of personal worth (65.7, 51.9), social standards (57.7, 56.3), social skills (57.1, 55.6), and self reliance (51.0, 57.8) Characteristics that showed a declining tendency over time include the sense of personal freedom (with the means of 55.2 and 49.4 at grades 1 and 4, respectively, anti-social tendency (58.1, 38.6), family relations (58.6, 46.3), and community relations (64.8, 45.6). Attributes showing an increasing tendency over time were withdrawing tendencies (with the means of 50.0 and 59.2) and nervous symptoms (with the means of 43.3 and 60.6 at grades 1 and 4, respectively).

The means and standard deviations of the sixteen personality factors of the subjects at grade 10 as measured by the 16 PF are shown in Table 11.

To compare the means of these personality factors, as shown in the table, with that of a national norm, they can be converted into sten scores in accordance with the norm given by the Institute for Personality and Ability Testing (IPAT), the publisher of the 16 PF.

TABLE 11

MEANS AND STANDARD DEVIATIONS OF PERSONALITY ATTRIBUTES
AS MEASURED BY THE 16PF AT GRADE 10

FACTOR		MEAN	SD
A	(aloff-warm)	6.4	2.2
B	(dull-bright)	3.9	0.9
C	(emotional-mature)	6.8	2.1
E	(submissive-dominant)	5.5	2.1
F	(glum-enthusiastic)	7.1	2.0
G	(casual-conscientious)	5.9	2.0
H	(timid-adventurous)	5.9	1.9
I	(tough-sensitive)	5.3	2.7
L	(trustful-suspecting)	6.1	2.0
M	(conventional-eccentric)	6.5	2.4
N	(simple-sophisticated)	5.8	1.4
O	(confident-insecure)	4.7	1.7
Q_1	(conservative-experimenting)	4.6	1.9
Q_2	(dependent-self sufficient)	6.7	1.7
Q3	(uncontrolled-self controlled)	6.3	1.9
Q4	(stable-tense)	5.3	1.9

Sten Scores refer to scores that are distributed over ten equal interval standard score points, from 1 through 10, with the population means fixed at 5.5. Stens 5 and 6 extend, therefore, a half standard deviation below and above the mean, while the outer limits for stens 1 and 10 are 2.5 standard deviations below and above the mean, respectively.

When the norm of general population for men and women together (established on the basis of 1,217 men and women, ranging from 15 to 80 years of age according to IPTA) are used the sten scores of the means of Factors A, B, C, D, E, F, G, H, I, L, M, N, O, Q_1, Q_2, Q_3, and Q_4, as shown in above table, would become 4, 6, 5, 7, 5, 5, 4, 5, 7, 7, 7, 6, 5, 5, 4, and 6, respectively.

Factors which yielded central tendencies lower than the mean of the norm are A, C, F, G, H, I, Q_1, Q_2, Q_3, while factors which yielded central tendencies higher than the mean of the norm are B, E, M, N, O and Q_4. In other words, in comparison to the national norm, the subjects as a group at grade 10 showed relatively aloff, emotional, glum, casual, timid, tough, conservative, dependent, and uncontrolled personality traits; they appeared to have relatively bright, dominant, suspecting, sophisticated, insecure, and tense personality attributes as well. However, the deviations of these characteristics from the mean of the norm, which is the sten score of 5.5, were rather small.

B. Characteristics of Underachievers

The way in which a subject's mental growth is related to his reading (or spelling or arithmetic or composite basic skills) growth in order to estimate the level at which he should be able to read (or spell or perform arithmetic operations or to demonstrate basic skills) is to consider that

the subject should have reached a reading (or spelling or arithmetic or basic skill) grade roughly comparable to his mental grade.

If a subject's reading (or spelling or arithmetic or basic skills) grade is significantly lower than his mental grade, he is classified as and underachiever in reading (or spelling or arithmetic or basic skills).

In this study, a difference of one grade or more of the achievement grade below the mental grade was used to classify the subject as an underachiever. The mental grade (the grade of expected achievement) was given by the formula: IQ/100 times years in school plus 1.0 equals mental grade (expected grade of achievement) where IQ/100 would be considered an index of rate of learning each new experience (see Bond & Tinker, Reading Difficulties: their diagnosis and correction. Appleton-Century-Crofts, 1967, pp. 91-93.)

Characteristics of underachievement in relation to normal and over-achievement were examined by taking the assessment made of all the subjects by two psychologists, one psychiatrist, and the teacher with a rating scale. The characteristics rated were social adjustment, emotional stability, discouragement, responsibility, self-confidence, subject-matter, progress, participation in class discussion, general attitude, independence, sensitive areas (overweight, etc.), amount of attention needed, amount of class discipline, aggressiveness, shyness, amount of encouragement needed, cooperativeness, and attention span. Each of these seventeen characteristics were rated with a three-point scale (see Appendix F)

B-1 Reading Underachievers

The subject's reading grade as measured by the California Achievement Tests at grade 3 and by the Iowa Tests of Basic Skills at grades 5 and 6

were compared with the expected reading grade as measured by the formula of IQ/100 times years in school plus 1.0 at grades 3, 5, and 6, respectively. On the basis of the comparison, the subjects were then divided into two groups, underachievers and others.

With these groups as the two levels of an independedt variable each of the seventeen characteristics rated was examined as the dependent measure with the one-way analysis of variance technique. Tables 12, 13, and 14 summarize the results of variance analyses at grades 3, 5, and 6, respectively.

At grade 3, the only significant mean difference found between the two groups was the characteristic having to do with discouragement ($p < .01$). Since this attribute was rated on easily discouraged, weighted 1; occasionally discouraged, weighted 2; and not easily discouraged, weighted 3; the mean of 1.0 for underachievers and the mean of 1.8 for others would indicate that reading underachievers were significantly more easily discouraged than others. No other characteristic differentiated underachievers significantly from others.

At grade 5, underachievers showed significant difference, beyond the .01 level, from others on two characteristics. These were characteristics having to do with sensitive areas and attention span, yielding the means of 2.0 and 1.3 for the underachieving group and the means of 1.2 and 1.9 for the other group. Another characteristic

TABLE 12

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 3 UNDERACHIEVERS VS OTHERS IN READING

	UNDERACHIEVERS (N=5)		OTHERS (N=23)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.4	0.8	2.5	0.7	0.11
EMOTIONAL STABILITY	2.6	0.5	2.4	0.7	0.34
DISCOURAGEMENT	1.0	0.0	1.8	0.6	5.24*
RESPONSIBILITY	2.0	1.0	2.2	0.8	0.08
SELF-CONFIDENCE	1.0	0.0	1.6	0.7	1.95
SUBJECT-MATTER PROGRESS	2.0	0.0	2.1	0.4	0.18
CLASS DISCUSSION	1.5	0.9	1.7	0.9	0.27
GENERAL ATTITUDE	3.0	0.0	2.5	0.7	2.98
INDEPENDENCE	2.0	0.0	2.5	0.5	2.40
SENSITIVE AREAS	1.5	0.5	1.3	0.6	0.26
ATTENTION NEEDED	2.5	0.9	2.8	0.8	1.03
CLASS DISCIPLINE	2.0	0.8	1.7	0.8	0.29
AGGRESSIVENESS	2.0	0.7	1.6	0.6	1.05
SHYNESS	2.3	0.9	1.7	0.7	1.50
ENCOURAGEMENT NEEDED	2.5	0.9	3.0	0.0	2.85
COOPERATIVENESS	2.4	0.8	2.4	0.8	0.01
ATTENTION SPAN	1.6	0.5	1.6	0.5	0.01

*$p < .01$

TABLE 13

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 5 UNDERACHIEVERS VS OTHERS IN READING

	UNDERACHIEVERS (N=10)		OTHERS (N=16)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.7	0.7	2.6	0.7	0.51
EMOTIONAL STABILITY	2.5	0.7	2.6	0.6	0.11
DISCOURAGEMENT	1.6	0.7	2.1	0.7	1.95
RESPONSIBILITY	2.0	0.7	2.5	0.6	2.68
SELF-CONFIDENCE	1.2	0.4	1.5	0.7	1.27
SUBJECT-MATTER PROGRESS	1.9	0.3	2.3	0.6	3.03
CLASS DISCUSSION	2.1	0.8	1.9	0.8	0.28
GENERAL ATTITUDE	2.2	0.8	2.6	0.6	1.90
INDEPENDENCE	2.5	0.5	2.4	0.5	0.20
SENSITIVE AREAS	2.0	0.8	1.2	0.4	9.20**
ATTENTION NEEDED	2.5	0.8	2.8	0.9	1.93
CLASS DISCIPLINE	1.9	0.6	1.4	0.6	2.44
AGGRESSIVENESS	2.0	0.8	1.6	0.5	1.45
SHYNESS	1.5	0.8	1.8	0.6	0.52
ENCOURAGEMENT NEEDED	3.0	0.0	3.0	0.0	0.00
COOPERATIVENESS	2.2	0.8	2.7	0.6	2.67
ATTENTION SPAN	1.3	0.4	1.9	0.3	14.19**

**$p < .01$

TABLE 14

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 6 UNDERACHIEVERS VS OTHERS IN READING

	UNDERACHIVERS (N=6)		OTHERS (N=16)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.2	0.9	2.8	0.4	4.52*
EMOTIONAL STABILITY	2.7	0.7	2.7	0.5	0.01
DISCOURAGEMENT	1.8	0.7	1.8	0.6	0.00
RESPONSIBILITY	2.7	0.5	2.5	0.7	0.35
SELF-CONFIDENCE	1.5	0.8	1.5	0.8	0.01
SUBJECT-MATTER PROGRESS	2.0	0.6	2.3	0.7	0.90
CLASS DISCUSSION	1.4	0.5	2.1	0.9	3.01
GENERAL ATTITUDE	2.7	0.7	2.5	0.6	0.96
INDEPENDENCE	2.3	0.4	2.5	0.5	0.96
SENSITIVE AREAS	2.2	0.7	1.2	0.4	12.98**
ATTENTION NEEDED	1.5	0.9	2.1	0.9	1.09
CLASS DISCIPLINE	1.6	0.8	1.5	0.6	0.13
AGGRESSIVENESS	1.5	0.9	1.5	0.5	0.01
SHYNESS	2.0	0.8	1.5	0.5	1.89
ENCOURAGEMENT NEEDED	3.0	0.0	2.9	0.3	0.26
COOPERATIVENESS	2.6	0.8	2.5	0.6	0.07
ATTENTION SPAN	1.6	0.5	1.9	0.3	1.42

* P $<.05$
** P $<.01$

which seemed to differentiate the two groups was that of subject-matter progress. The mean of 1.9 for underachievers and the mean of 2.3 for others on subject-matter progress were significantly different at the .10 level. In other words, reading underachievers were more sensitive about areas such as overweight, speech problem, etc.; they had shorter attention span; and they seemed to show poorer subject-matter progress.

At grade 6, reading underachievers and others showed significant mean differences on social adjustment ($p < .05$) and sensitive areas ($p < .01$). Another characteristic which seemed to differentiate the two groups was participation in class discussion ($p < .10$). The mean ratings of these three attributes were 2.2, 2.2, and 1.4 for the underachieving group and 2.8, 1.2, and 2.1, respectively, for other subjects. Reading underachievers appeared to have poorer social adjustment, more sensitive feeling about overweight, speech problem, etc., and lower frequency of participation in class discussion at this stage.

B-2 Spelling Underachievers

Spelling performance of the subjects at grades 5 and 6 were measured by the Iowa Tests of Basic Skills which yielded the spelling grade. The expected spelling grade was arrived at by the formula: IQ/100 times years in school plus 1.0, at both grades 5 and 6. Those subjects whose spelling grades fell one grade or more below their expected spelling grades were then classified as spelling underachievers.

Spelling underachievers and other subjects as two distintive

groups were then compared with respect to seventeen characteristics as rated by a group of professionals. The comparison was carried out with one-way variance analyses. Results of these analyses for grades 5 and 6 are presented in Tables 15 and 16, respectively.

At grade 5, the two groups showed significant mean differences on three attributes. They were self-confidence ($p < .01$), subject-matter progress ($p < .05$), and sensitive areas ($p < .05$). The mean ratings of these characteristics were 1.0, 2.0, and 2.0 for the under-achieving group and 1.7, 2.4, and 1.2 for the other group, respectively. No significant differences were found between the two groups in connection with other characteristics. These findings revealed that, in comparison to other subjects, spelling underachievers showed significantly lower level of self-confidence, poorer subject-matter progress, and higher level of sensitivity concerning overweight, speech problem,etc.

At grade 6, three characteristics significantly differentiated spelling underachievers from other subjects beyond the .05 level. These attributes were responsibility, subject-matter progress, and the amount of attention needed which yielded the mean ratings of 2.2, 2.0, and 2.4 for the underachieving group and the mean ratings of 2.9, 2.6, and 1.4 for the other group, respectively. Another characteristic which needs mentioning is the amount of class discipline needed. This attribute differentiated the two groups at the .10 level of significance, with the mean ratings of 1.8, and 1.2 for underachievers and other subjects, respectively. At grade 6, in other words, spelling under-achievers carried out significantly fewer responsibilities, they showed

TABLE 15

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 5 UNDERACHIEVERS VS OTHERS IN SPELLING

	UNDERACHIEVERS (N=13)		OTHERS (N=14)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.8	0.4	2.5	0.8	1.28
EMOTIONAL STABILITY	2.8	0.4	2.5	0.8	1.88
DISCOURAGEMENT	1.8	0.6	1.9	0.7	0.14
RESPONSIBILITY	2.1	0.7	2.5	0.6	1.53
SELF-CONFIDENCE	1.0	0.0	1.7	0.8	8.16**
SUBJECT-MATTER PROGRESS	2.0	0.4	2.4	0.5	5.07 *
CLASS DISCUSSION	2.2	0.8	1.9	0.9	0.60
GENERAL ATTITUDE	2.6	0.6	2.5	0.8	0.30
INDEPENDENCE	2.3	0.4	2.5	0.5	0.78
SENSITIVE AREAS	2.0	0.9	1.2	0.4	7.82 *
ATTENTION NEEDED	2.4	0.8	1.8	0.9	2.23
CLASS DISCIPLINE	1.7	0.6	1.4	0.6	1.28
AGGRESSIVENESS	1.8	0.7	1.7	0.6	0.07
SHYNESS	1.7	0.7	1.6	0.7	0.04
ENCOURAGEMENT NEEDED	3.0	0.0	3.0	0.0	0.00
COOPERATIVENESS	2.5	0.7	2.6	0.7	0.29
ATTENTION SPAN	1.5	0.5	1.8	0.4	1.97

*P $<$ .05

**P $<$ .01

TABLE 16

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 6 UNDERACHIEVERS VS OTHERS IN SPELLING

	UNDERACHIEVERS (N=14)		OTHERS (N=9)		
VARIABLES	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.5	0.7	2.8	0.4	0.69
EMOTIONAL STABILITY	2.6	0.6	2.8	0.4	0.29
DISCOURAGEMENT	1.7	0.8	1.9	0.4	0.22
RESPONSIBILITY	2.2	0.8	2.9	0.3	6.69*
SELF-CONFIDENCE	1.4	0.7	1.7	0.8	0.64
SUBJECT-MATTER PROGRESS	2.0	0.7	2.6	0.5	4.32*
CLASS DISCUSSION	2.1	0.9	1.9	0.8	0.27
GENERAL ATTITUDE	2.4	0.7	2.8	0.4	1.90
INDEPENDENCE	2.5	0.5	2.4	0.5	0.07
SENSITIVE AREAS	1.6	0.6	1.2	0.6	1.50
ATTENTION NEEDED	2.4	0.9	1.4	0.7	4.88*
CLASS DISCIPLINE	1.8	0.8	1.2	0.4	3.95
AGGRESSIVENESS	1.8	0.8	1.4	0.5	1.72
SHYNESS	1.3	0.7	1.8	0.4	2.01
ENCOURAGEMENT NEEDED	3.0	0.0	2.9	0.4	1.15
COOPERATIVENESS	2.3	0.8	2.8	0.4	2.93
ATTENTION SPAN	1.7	0.5	1.9	0.3	1.05

*P $< .05$

significantly poorer subject-matter progress, they needed significantly more attention, and they appeared to have more disciplinary problem in class.

B-3 Arithmetic Underachievers

The subject's achievement in arithmetic was measured by the Iowa Tests of Basic Skills. The total arithmetic score was used for grade placement. The arithmetic grade of a given subject was then compared with his expected arithmetic grade which was determined by the formula: IQ/100 times years in school plus 1.0 to see whether or not he belonged to the underachieving group. An underachiever in arithmetic was one whose achievement grade was lower than his expected grade by at least one grade.

Arithmetic underachievers and others as two groups were then compared, with one-way ANOVA, in relation to the ratings of seventeen characteristics conducted by a group of professionals. Results of the comparisons for grades 5 and 6 are summarized in Tables 17 and 18, respectively.

At grade 5, three characteristics yielded significant differences at the .05 level between the two groups. These were subject-matter progress (means: underachievers 1.9, others 2.4), sensitive areas (means: underachievers, 2.0, others 1.2), and attention span (means: underachievers 1.3, others 1.8). One attribute gave a significant mean difference at the .10 level. This characteristic had to do with discouragement (means: underachievers 1.6, others 2.1). As compared with other subjects, arithmetic underachievers appeared to have

TABLE 17

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 5 UNDERACHIEVERS VS OTHERS IN ARITHMETIC

	UNDERACHIEVERS (N=11)		OTHERS (N=16)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.5	0.4	2.8	0.6	1.42
EMOTIONAL STABILITY	2.6	0.7	2.7	0.6	0.16
DISCOURAGEMENT	1.6	0.7	2.1	0.5	3.35
RESPONSIBILITY	2.1	0.8	2.4	0.6	0.79
SELF-CONFIDENCE	1.3	0.6	1.5	0.7	0.62
SUBJECT-MATTER PROGRESS	1.9	0.3	2.4	0.5	7.67*
CLASS DISCUSSION	1.9	0.8	2.1	0.8	0.50
GENERAL ATTITUDE	2.4	0.8	2.6	0.6	0.61
INDEPENDENCE	2.1	0.4	2.5	0.5	2.49
SENSITIVE AREAS	2.0	0.8	1.2	0.6	5.83*
ATTENTION NEEDED	2.3	0.8	1.9	0.9	1.13
CLASS DISCIPLINE	1.8	0.6	1.4	0.6	1.56
AGGRESSIVENESS	2.0	0.8	1.5	0.9	1.15
SHYNESS	1.9	0.8	1.4	0.7	1.35
ENCOURAGEMENT NEEDED	3.0	0.0	3.0	0.0	0.00
COOPERATIVENESS	2.4	0.8	2.7	0.6	0.91
ATTENTION SPAN	1.3	0.5	1.8	0.4	5.76*

*P < .05

TABLE 18

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 6 UNDERACHIEVERS VS OTHERS IN ARITHMETIC

	UNDERACHIEVERS (N=8)		OTHERS (N=16)		
VARIABLES	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.5	0.7	2.7	0.6	0.66
EMOTIONAL STABILITY	2.8	0.4	2.7	0.6	0.37
DISCOURAGEMENT	1.5	0.8	1.8	0.6	0.99
RESPONSIBILITY	2.1	0.8	2.6	0.6	1.67
SELF-CONFIDENCE	1.1	0.0	1.7	0.9	5.39*
SUBJECT-MATTER PROGRESS	1.6	0.5	2.5	0.5	15.29**
CLASS DISCUSSION	1.5	0.8	2.1	0.8	2.36
GENERAL ATTITUDE	2.4	0.7	2.6	0.6	0.19
INDEPENDENCE	2.3	0.5	2.5	1.0	0.04
SENSITIVE AREAS	1.7	0.7	1.3	0.6	1.04
ATTENTION NEEDED	2.5	0.5	1.8	0.9	2.55
CLASS DISCIPLINE	1.7	0.7	1.5	0.7	0.52
AGGRESSIVENESS	1.5	1.0	1.6	0.6	0.11
SHYNESS	1.7	0.9	1.6	0.2	0.11
ENCOURAGEMENT NEEDED	3.0	0.0	2.9	0.3	0.48
COOPERATIVENESS	2.5	0.5	2.5	0.7	0.01
ATTENTION SPAN	1.7	0.5	1.8	0.4	0.12

* P. .05
**P. .01

significantly slower overall subject-matter progress; more sensitive feeling about overweight, speech problem, etc.; and shorter attention span. They seemed to be discouraged more easily, as well.

At grade 6, arithmetic underachievers were significantly differentiated from other subjects by self-confidence (means: underachievers 1.1, others 1.7; $p < .05$) and subject-matter progress (means: underachievers 1.6, others 2.5; $p < .01$). Underachievers in arithmetic were rated as being significantly lower on self-confidence and slower in the overall subject-matter progress. No significant difference between the two groups were found with regard to other characteristics rated.

B-4 Underachievers in Basic Skills

Basic skills of the subject were assessed in terms of the composite measure of achievement in vocabulary (one score), reading comprehension (one score), language (five scores), work-study skills (four scores) and arithmetic skills (three scores)as yielded by the Iowa Tests of Basic Skills.

The grade placement of his achievement in basic skills was then used as a basis for determining whether or not he was an underachiever in relation to his expected grade which was calculated by the formula: IQ/100 times years in school plus 1.0. Underachieving in basic skills was characterized by a discrepancy of at least a whole grade between the achievement and expected grade.

Underachievers and others in basic skills at grades 5 and 6 were

then examined as to their similarities and differences in connection with seventeen characteristics as rated by a group of professionals. Results of the investigation carried out with one-way ANOVA are shown in Tables 19 and 20.

At grade 5, two characteristics were found to differentiate underachievers from other subjects at the .05 level of significance. They were aggressiveness (means: underachievers 2.2, others 1.2) and attention span (means: underachievers 1.4, others 1.8). Underachievers in basic skills showed significantly more aggressive behavior and shorter attention span. It was found that two other characteristics gave mean differences at the .10 level of significance. It appeared that underachievers in basic skills at grade 5 were more sensitive about their weights, speech problem, etc. (means: underachievers 2.0, others 1.3) and in need of more attention (means: underachievers 2.6, others 1.8).

At grade 6, no mean differences were significant beyond the .05 level. There were two attributes, however, which differentiated underachivers from others at the .10 level of significance. Underachievers in basic skills appeared to show poorer social adjustment (means: underachievers 2.3; others 2.8) and slower subject-matter progress (means: underachievers 1.9, others 2.4).

TABLE 19

MEANS, STANDARD DIVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES GRADE 5 UNDERACHIEVERS VS OTHERS IN BASIC SKILLS

	UNDERACHIVERS (N=10)		OTHERS (N=17)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.7	0.6	2.6	0.5	0.24
EMOTIONAL STABILITY	2.6	0.7	2.6	0.6	0.01
DISCOURAGEMENT	1.8	0.8	1.9	0.5	0.29
RESPONSIBILITY	2.1	0.8	2.4	0.6	0.45
SELF-CONFIDENCE	1.2	0.4	1.5	0.8	1.14
SUBJECT-MATTER PROGRESS	2.1	0.3	2.2	0.8	0.11
CLASS DISCUSSION	2.1	0.8	2.0	0.8	0.12
GENERAL ATTITUDE	2.5	0.8	2.6	0.6	0.10
INDEPENDENCE	2.3	0.5	2.4	0.5	0.01
SENSITIVE AREAS	2.0	0.8	1.3	0.6	3.87
ATTENTION NEEDED	2.6	0.7	1.8	0.9	3.84
CLASS DISCIPLINE	1.9	1.3	1.3	0.6	1.88
AGGRESSIVENESS	2.2	0.7	1.2	1.0	4.41*
SHYNESS	1.6	0.7	1.7	0.6	0.14
ENCOURAGEMENT NEEDED	3.0	0.0	3.0	0.0	0.00
COOPERATIVENESS	2.3	0.8	2.6	0.3	1.45
ATTENTION SPAN	1.4	0.5	1.8	0.4	5.85*

*P $<$ .05

TABLE 20

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF SEVENTEEN DEPENDENT MEASURES - GRADE 6 UNDERACHIEVERS VS OTHERS IN BASIC SKILLS

VARIABLE	UNDERACHIEVERS (N=7) MEAN	S.D.	OTHERS (N=16) MEAN	S.D.	F
SOCIAL ADJUSTMENT	2.3	0.9	2.8	0.4	3.22
EMOTIONAL STABILITY	2.6	0.7	2.8	0.4	0.53
DISCOURAGEMENT	1.5	0.8	1.9	0.5	1.50
RESPONSIBILITY	2.2	0.8	2.6	0.6	1.91
SELF-CONFIDENCE	1.4	0.7	1.5	0.8	0.08
SUBJECT-MATTER PROGRESS	1.9	0.6	2.4	0.6	3.18
CLASS DISCUSSION	1.6	0.8	2.1	0.8	1.43
GENERAL ATTITUDE	2.4	0.9	2.5	1.0	0.01
INDEPENDENCE	2.3	0.5	2.5	0.5	0.24
SENSITIVE AREAS	1.8	0.7	1.3	0.6	2.09
ATTENTION NEEDED	2.2	1.0	1.9	0.9	0.28
CLASS DISCIPLINE	2.0	0.9	1.4	0.6	2.30
AGGRESSIVENESS	2.0	1.0	1.5	0.5	1.66
SHYNESS	1.7	0.9	1.5	0.5	1.66
ENCOURAGEMENT NEEDED	3.0	0.0	2.9	0.3	0.34
COOPERATIVENESS	2.3	0.7	2.6	0.6	0.49
ATTENTION SPAN	1.7	0.5	1.8	0.4	0.29

C. CHARACTERISTICS OF SUBJECTS HAVING SUBJECT-MATTER DIFFICULTY (GRADE 10)

One of the items in the student interview conducted in 1970 was the choice of subject-matter which the student considered as the poorest one for him. Mathmetics and history emerged as two subject-matter areas in which enough students made the first choice and, therefore, enabled the investigators to examine a selected number of dependent variables with subjects who had the utmost difficulty and those who did not as the two levels of an independent variable.

The dependent measures investigated were the subjects' IQ scores at grades 1, 3, 5, 6, and 8; their understanding of basic social concepts, general background in the natural sciences, correctness and appropriateness of expression, ability to do quantitative thinking, ability to interpret reading materials in the social sciences, ability to interpret reading materials in the natural sciences, ability to interpret literary materials, general vocabulary, the composite of these eight attributes, and using sources of information as measured by the Iowa Tests of Educational Development at grade 10; sixteen personality factors as measured by the 16 PF at grade 10; their self-ideal self difference and perceived attitude of the parents as measured by a self test and a parent's attitude scale at grade 10; the teacher's ratings of student's behaviors with regard to getting into fights, avoiding contact with classmates, having difficulty in learning school subjects, making immature responses, pouring all the energies into school work, behaving in ways which are dangerous to self or others, being unhappy, and becoming upset or sick often as measured by a teacher rating scale at

grade 10; and the parent's attitude toward the freedom of children as measured by a 33-item scale.

C-1 Subjects with Learning Difficulty in Mathematics

Subjects who considered mathematics as the poorest subject-matter and those whose first choice of the most difficult area was not mathematics were treated as the two levels of an independent variable. To compare the two groups, each of the forty-three dependent variables was then analyzed with the one-way ANOVA technique. Results of the forty-three analyses are summarized in Table 21.

Among the forty-three F ratios resulted, four were significant at the .05 level and three were significant beyond the .01 level.

The three dependent variables which differentiated the subjects who had utmost difficulty in mathematics from other subjects beyong the .01 level were the ability to do quanitative thinking (means: problem subjects 12.7, others 19.8), the ability to interpret reading materials in the natural sciences (means: problem subjects 13.5, others 20.4). The four dependent measures which produced significant mean differences between the two groups at the .05 level were understanding of social concepts (means: problem subjects 11.8, others 15.6), general background in the natural sciences (means: problem subjects 14.2, others 19.0) general vocabulary (means: problem subjects 15.2, others 19.0), and parent's attitude toward children's freedom (means: problem subjects 4.*, others 5.5).

TABLE 21

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF FORTY-THREE DEPENDENT MEASURES GRADE 10 SUBJECTS WITH MATHEMATICS AS THE POOREST AREA VS OTHERS

		PROBLEM Ss (N=8)		OTHERS (N=19)		
VARIABLE		MEAN	S.D.	MEAN	S.D.	F
IQ	grade 1	110.4	6.3	111.4	8.6	0.07
	grade 3	116.6	12.7	121.4	10.3	0.76
	grade 5	108.8	10.8	113.7	12.9	0.81
	grade 6	108.3	8.3	115.1	15.5	0.92
	grade 8	109.0	15.1	118.3	11.2	0.49
ITED	social concept	11.8	4.0	15.6	2.1	7.28*
	natural science	14.2	5.7	19.0	2.4	7.10*
	expression	13.8	7.8	17.9	1.2	3.65
	quant. thinking	12.7	4.3	19.8	1.7	28.01**
	interpret soc. st.	16.2	5.0	17.7	4.8	0.38
	interpret nat. sce.	15.2	5.1	21.6	3.7	9.80*
	interpret lit.	13.5	6.2	18.5	4.7	3.80
	vocabulary	15.2	4.8	19.0	1.9	6.65*
	composite score	14.5	4.9	18.6	5.4	2.48
	sources inform.	13.5	5.6	20.4	4.6	8.09**
16PF	Factor A	5.9	2.0	7.1	2.1	1.51
	Factor B	4.1	0.6	3.7	0.8	1.41
	Factor C	6.4	0.8	6.9	1.8	0.27
	Factor E	6.1	2.4	5.2	2.1	0.81
	Factor F	7.7	2.2	6.8	1.9	0.99

TABLE 21 (CONTINUED)

VARIABLES		PROBLEM Ss (N=8) MEAN	S.D.	OTHERS (N=19) MEAN	S.D.	F
16PF	Factor G	6.4	2.6	5.6	1.6	0.92
	Factor H	6.6	1.8	5.8	1.8	0.93
	Factor I	5.6	2.8	5.9	2.4	0.10
	Factor L	6.4	2.3	5.7	2.0	0.53
	Factor M	7.0	2.4	5.8	2.2	1.38
	Factor N	5.6	1.5	5.6	1.2	0.00
	Factor O	4.4	1.3	4.9	1.8	0.43
	Factor Q1	5.6	1.4	4.2	1.9	3.00
	Factor Q2	6.3	1.3	6.7	1.9	0.28
	Factor Q3	6.3	3.4	6.3	1.9	0.00
	Factor Q4	5.3	1.8	5.8	1.8	0.33
Self-Ideal self		24.0	10.3	28.8	11.7	0.83
Perceived parent's attitude		17.0	6.1	23.2	9.6	2.60
Teacher's rating fights		4.3	1.2	4.0	1.5	0.22
	avoidance	3.8	1.3	3.8	1.4	0.00
	learning difficulty	4.3	1.8	4.5	1.6	0.03
	immature response	3.8	1.2	3.9	1.3	0.03
	school work	3.8	1.5	3.7	1.4	0.03
	danger to self-other	4.0	0.8	4.1	1.2	0.01
	depression	3.7	1.6	4.4	1.4	1.04
	upset	3.7	1.2	4.1	1.5	0.40
	composite rating	30.7	6.4	32.0	6.0	0.19

TABLE 21 (CONTINUED)

VARIABLE	PROBLEM Ss (N=8) MEAN	S.D.	OTHERS (N=19) MEAN	S.D.	F
Parent's attitude toward child freedom	4.8	0.3	5.5	0.7	7.01*

* p < .05

** p < .01

In addition to the seven dependent variables mentioned above, two more measures seemed to differentiate the subjects having problems in mathematics from others. They were the correctness and appropriateness of expression (means: problem subjects 13.8, others 17.9) and the ability to interpret literary materials (means: problem subjects 13.5, others 18.5) as measured by the Iowa Tests of Educational Development. The mean differences of the two groups with respect to these two variables were significant at the .10 level. The subjects who had difficulty in mathematics showed lower level of development in these two areas.

No other dependent measures were found to significantly differentiate the two groups of subjects.

C-2 Subjects with Learning Difficulty in History

Subjects who indicated that history was the most difficult subject-matter and those who did not were compared as the two levels of an independent variable with one-way ANOVA by taking each of the forty-three dependent measures for analysis. Results of these analyses are shown in Table 22.

Of the forty-three F ratios, three were significant beyond the .05 level and one was significant at the .10 level.

The three dependent measures which produced significant mean differences, beyond the .05 level, between the subjects with learning difficulty in history and the other subjects were self-ideal self difference (means: problem subjects 36.0, others 24.2), perceived parent's attitude (means: problem subjects 28.6, others 18.6),

TABLE 22

MEANS, STANDARD DEVIATIONS, AND F RATIOS OF FORTY-THREE DEPENDENT MEASURES GRADE 10 SUBJECTS WITH HISTORY AS THE POOREST AREA VS OTHERS

		PROBLEM Ss (N=7)		OTHERS (N=20)		
VARIABLE		MEAN	S.D.	MEAN	S.D.	F
IQ	grade 1	107.6	11.9	112.1	5.9	1.21
	grade 3	119.7	11.7	120.4	10.9	0.02
	grade 5	107.6	14.2	113.9	11.4	1.31
	grade 6	107.4	9.7	114.9	9.8	2.05
	grade 8	113.2	7.1	116.6	10.7	0.07
ITED	social concept	13.0	1.7	14.3	5.0	0.42
	nat. sci.	14.9	4.9	17.8	5.5	1.38
	expression	15.1	4.3	16.4	6.1	0.24
	quant. thinking	15.1	3.4	17.9	5.9	1.18
	interpret soc. st.	13.3	5.9	17.9	5.5	3.09
	interpret nat. sci.	17.3	6.2	19.8	6.3	0.69
	interpret lit.	14.0	7.3	17.4	5.8	1.33
	vocabulary	16.1	5.1	17.6	4.8	0.41
	composite score	15.6	4.8	18.4	5.7	1.23
	sources inform.	18.6	4.3	18.6	6.3	0.00
16PF	Factor A	7.4	2.3	6.4	2.1	1.00
	Factor B	3.7	0.9	3.9	0.7	0.23
	Factor C	6.7	1.9	6.8	1.9	0.01
	Factor E	4.4	1.9	5.9	2.2	2.14
	Factor F	6.9	2.4	7.1	1.9	0.07

TABLE 22 (CONTINUED)

VARIABLE		PROBLEM Ss (N=7) MEAN	S.D.	OTHERS (N=20) MEAN	S.D.	F
16PF	Factor G	5.3	1.3	6.0	2.2	0.61
	Factor H	6.6	1.9	5.8	1.7	0.93
	Factor I	6.3	2.6	5.7	2.5	0.28
	Factor L	5.6	2.3	6.1	2.1	0.24
	Factor M	6.6	1.7	5.9	2.5	0.35
	Factor N	6.0	1.1	5.4	1.3	1.13
	Factor O	5.6	1.4	4.5	1.7	2.01
	Factor Q1	4.4	1.9	4.6	1.8	0.45
	Factor Q2	7.1	2.3	6.4	1.5	0.85
	Factor Q3	5.4	1.5	6.6	2.6	1.19
	Factor Q4	6.1	1.3	5.4	2.0	0.68
Self-ideal self		36.0	9.0	24.2	10.7	6.14*
Perceived parents' attitude		28.6	9.7	18.6	7.2	7.46*
Teacher's rating fights		4.0	1.6	4.1	1.4	0.03
	avoidance	4.0	1.9	3.8	1.1	0.14
	learning difficulty	5.3	0.7	4.1	1.8	2.71
	immature response	4.1	1.0	3.8	1.3	0.32
	school work	3.1	1.1	4.0	1.4	1.83
	danger to self-other	4.4	0.7	3.9	1.2	1.23
	depression	4.9	1.1	3.9	1.6	1.81
	upset	5.0	1.1	3.6	1.4	5.57*
	composite rating	33.9	2.4	30.7	7.0	1.24

TABLE 22 (CONTINUED)

	PROBLEM Ss (N=7)		OTHERS (N=20)		
VARIABLE	MEAN	S.D.	MEAN	S.D.	F
Parent's attitude toward child freedom	5.8	0.5	5.1	4.4	0.03

*p < .05

and the teacher's rating on the upsetting tendence (means: problem subjects 5.0, others 3.6). The dependent variable which yielded a significant F ratio at the .10 level was the ability to interpret reading materials in the social sciences (means: problem subjects 13.3, others 17.9) as measured by the Iowa Tests of Educational Development.

These findings revealed that subjects who considered history the most difficult subject-matter showed significantly (1) greater discrepancy between ideal self and perceived self; (2) lesser degree of perceived parent's acceptance (the larger the score the greater the deviation and, thus, the lesser the degree of perceived parent's acceptance); (3) greater tendency to become upset or sick, especially when faced with a difficult school problem or situation; and (4) lower level of ability to interpret reading materials in the social sciences.

There were no statistically significant differences between the two groups of subjects in connection with other dependent variables.

D. KINDERGARTEN AND FIRST-GRADE ATTRIBUTES AS DETERMINANTS OF EDUCATIONAL DEVELOPMENT (GRADES 1-10)

In an effort to establish baseline criteria for identification of preschool children with learning problems, the subjects' behaviors as observed by a group of two psychologists, one psychiatrist, and one classroom teacher during the period when they were enrolled in Kindergarten and data concerning the subjects' preschool characteristics acquired from the parents were examined in relation to their academic

achievement and educational development for the period grades 1 through 10.

In addition, the subjects' personality attributes, scholastic aptitude, and reading readiness measured at grade 1 were also investigated correlationally with respect to academic performance and educational development during the period from grade 1 through grade 10.

D-1 Subjects' Behaviors at Kindergarten Observed by Specialists as Correlates of Educational Development

Seventeen behavioral characteristics of the subjects observed by the specialists at Kindergarten included social adjustment, emotional stability, discouragement, responsibility, self-confidence, subject-matter progress, participation in class discussion, general attitude, independence, sensitive areas (overweight, speech problem ,etc.), amount of attention needed, amount of class discipline, aggressiveness, shyness, amount of encouragement needed, cooperativeness, and attention span.

A total of 116 measures of academic achievement and educational development were involved in correlational analyses in relation to the subjects' behaviors observed at kindergarten. The breakdown of these measures is as follows : at grade 1, one measure (reading) yielded by the Lee-Clark Reading Test; at grades 2 and 3, 10 measures (vocabulary comprehension, total reading, mechanics of English, spelling, total language, arithmetic reasoning, arithmetic fundamentals, arithmetic total, battery total) each yielded by the California Achievement Tests; at grades 4, 5, 6, 7, and 8, 15 measures (vocabulary, reading, spelling, capitalization, puncutation, language,usage, language total, reading

maps, reading grapsh, using references, work-study total, arithmetic concept, arithmetic problem, arithmetic total, composite) each as yielded by the Iowa Tests of Basic Skills; and at grades 9 and 10, 10 measures (understanding basic social concepts, general background in the natural sciences, expression, quantitative thinking, reading materials in social studies, reading materials in natural sciences, reading literary materials, vocabulary, composite, using sources of information) each as yielded by the Iowa Tests of Educational Development.

Correlations found between each of the two sets of variables are presented in Table 23 (a and b).

D-1-a Correlates of Social Adjustment

As can be seen in Table 23 a, none of the 116 measures of educational achievement and development correlated significantly with the attribute of social adjustment as observed at kindergarten.

D-1-b Correlates of Emotional Stability

Again, as can be observed in Table 23 a, emotional stability at kindergarten was not a significant correlate of the 116 measures of educational achievement and development.

D-1-c Correlates of Discouragement

The subjects' tendency to be discouraged at kindergarten level proved to be a significant determinant of four achievement measures; grade 4 language usage ($r=.70$, $df=9$, $p<.05$), grade 8 arithmetic problem ($r=.69$, $df=9$, $p<.05$), grade 9 reading social studies ($r=.73$, $df=9$, $p<.05$), and grade 9 reading natural sciences ($r=.62$, $df=9$, $p<.05$).

TABLE 23 a

CORRELATIONS BETWEEN BEHAVIORS OBSERVED BY SPECIALISTS AT KINDERGARTEN AND EDUCATIONAL DEVELOPMENT MEASURED AT GRADES 1-10 (FIGURE IN PARENTHESES INDICATES NUMBER OF CASES)

EDUCATIONAL DEVELOPMENT	Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Partic in class discussion	General Attitude	Independence
G1 reading (L-C)	-.05 (15)	-.21 (13)	-.04 (7)	-.74* (9)	-.18 (13)	-- (2)	-.01 (11)	.30 (11)	-.01 (9)
G2 vocabulary	.04 (10)	-.19 (10)	.02 (4)	.46 (3)	.38 (5)	-- (2)	.23 (7)	.89 (4)	-.32 (4)
comprehension	.11 (10)	-.10 (10)	.34 (4)	.50 (3)	.46 (5)	-- (2)	.09 (7)	.90 (4)	-.11 (4)
total reading	.06 (10)	-.13 (10)	.16 (4)	.46 (3)	.47 (5)	-- (2)	.17 (7)	.91 (4)	-.19 (4)
mech. English	.39 (10)	.27 (10)	.65 (4)	.76 (3)	.41 (5)	-- (2)	-.44 (7)	.83 (4)	.11 (4)
spelling	.08 (10)	-.06 (10)	-.12 (4)	.33 (3)	.63 (5)	-- (2)	.35 (7)	.92 (4)	.13 (4)
total language	.22 (10)	.08 (10)	.25 (4)	.43 (3)	.56 (5)	-- (2)	.05 (7)	.92 (4)	.10 (4)
arith reason	.36 (10)	.52 (10)	-.33 (4)	-.14 (3)	.91* (5)	-- (2)	-.14 (7)	.94 (4)	.96* (4)
arith fund.	-.14 (10)	.20 (10)	-.79 (4)	-.99 (3)	.29 (5)	-- (2)	-.49 (7)	.52 (4)	.16 (4)
arith total	.15 (10)	.37 (10)	-.83 (4)	-.25 (3)	.84 (5)	-- (2)	-.41 (7)	.93 (4)	.71 (4)
total (CAT)	.17 (10)	.13 (10)	.07 (4)	.31 (3)	.65 (5)	-- (2)	-.10 (7)	.95* (4)	.15 (4)
G3 vocabulary	-.03 (26)	-.14 (24)	.22 (11)	-.11 (12)	.28 (19)	1.00** (4)	.15 (19)	.54* (16)	-.10 (13)

TABLE 23 a

EDUCATIONAL DEVELOPMENT	Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Partic in class discussion	General Attitude	Independence
G3 comprehension	.07 (26)	.02 (24)	.33 (11)	-.09 (12)	.18 (19)	.82 (4)	.18 (19)	.53* (16)	.25 (13)
total reading	-.02 (26)	-.08 (24)	.23 (11)	-.11 (12)	.23 (19)	.75 (4)	.15 (19)	.51* (16)	.07 (13)
mech. English	-.01 (26)	-.09 (24)	.32 (11)	-.18 (12)	.35 (19)	.63 (4)	-.20 (19)	.62* (16)	-.04 (13)
spelling	-.05 (26)	-.03 (24)	.14 (11)	-.16 (12)	.27 (19)	.80 (4)	.15 (19)	.35 (16)	-.09 (13)
total language	-.02 (26)	-.03 (24)	.23 (11)	-.17 (12)	.25 (19)	.88 (4)	.05 (19)	.48 (16)	-.08 (13)
arith reason	-.09 (26)	-.25 (24)	.09 (11)	-.33 (12)	.27 (19)	.98* (4)	.09 (19)	.45 (16)	.08 (13)
arith fund	.02 (26)	.04 (24)	-.01 (11)	-.01 (12)	.09 (19)	.82 (4)	-.04 (19)	.29 (16)	.28 (13)
arith total	-.07 (26)	-.20 (24)	.05 (11)	-.28 (12)	.24 (19)	.96* (4)	.05 (19)	.43 (16)	.16 (13)
total (CAT)	-.04 (26)	-.10 (24)	.21 (11)	-.19 (12)	.26 (19)	.92 (4)	.11 (19)	.50* (16)	.06 (13)
G4 vocabulary	.05 (25)	-.13 (23)	.46 (11)	-.11 (12)	.29 (18)	.93 (4)	.42 (18)	.50* (16)	-.08 (13)
reading	-.07 (25)	-.24 (23)	.32 (11)	-.04 (12)	.24 (18)	.99** (4)	.26 (18)	.52* (16)	.01 (13)
spelling	-.20 (25)	-.26 (23)	.25 (11)	-.17 (12)	.21 (18)	.73 (4)	.07 (18)	.21 (16)	.11 (13)

TABLE 23 a

EDUCATIONAL DEVELOPMENT		Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Porgress	Particip in class discussion	General attitude	Independence
G4	capital.	-.11 (25)	-.12 (23)	.13 (11)	-.15 (12)	.23 (18)	.30 (4)	-.21 (18)	.35 (16)	-.00 (13)
	punct.	-.05 (25)	.08 (23)	.37 (11)	.26 (12)	-.05 (18)	.23 (4)	.18 (18)	.54* (16)	.30 (13)
	lang. usage	.06 (25)	.06 (23)	.70* (11)	.22 (12)	.06 (18)	.96* (4)	.58* (18)	.64* (16)	.09 (13)
	lang. total	-.09 (25)	-.07 (23)	.46 (11)	.04 (12)	.14 (18)	.60 (4)	.18 (18)	.48 (16)	.17 (13)
	maps	-.17 (25)	-.25 (23)	-.09 (11)	-.49 (12)	.30 (18)	.76 (4)	.13 (18)	.12 (16)	.28 (13)
	graphs	-.12 (25)	.05 (23)	.19 (11)	-.07 (12)	.23 (18)	-.34 (4)	.06 (18)	.15 (16)	.50 (13)
	references	-.11 (25)	-.19 (23)	.22 (11)	-.30 (12)	.48* (18)	.85 (4)	.41 (18)	.48 (16)	.18 (13)
	work-st total	-.15 (25)	-.14 (23)	.14 (11)	-.31 (12)	.36 (18)	.48 (4)	.20 (18)	.26 (16)	.40 (13)
	arith. concept	-.22 (25)	-.14 (23)	.19 (11)	-.21 (12)	.47* (18)	.67 (4)	.04 (18)	.36 (16)	.35 (13)
	arith prob.	-.24 (25)	-.02 (23)	.20 (11)	-.13 (12)	.03 (18)	.67 (4)	.07 (18)	.29 (16)	.30 (13)
	arith total	-.19 (25)	-.00 (23)	.21 (11)	-.20 (12)	.20 (18)	.65 (4)	.11 (18)	.37 (16)	.36 (13)
	composite(ITBS)	-.10 (25)	-.15 (23)	.39 (11)	-.12 (12)	.28 (18)	.91 (4)	.27 (18)	.48 (16)	.17 (13)
G5	vocabulary	-.05 (26)	-.21 (24)	.01 (11)	.06 (12)	.22 (19)	.21 (4)	.15 (19)	.41 (16)	-.00 (13)

TABLE 23 a

EDUCATIONAL DEVELOPMENT		Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Partic in class discussion	General Attitude	Independence
G5	reading	-.06 (26)	-.09 (24)	.13 (11)	.01 (12)	.25 (19)	.44 (4)	.16 (19)	.43 (16)	-.27 (13)
	spelling	-.01 (26)	-.05 (24)	.31 (11)	-.00 (12)	.20 (19)	.47 (4)	.06 (19)	.47 (16)	.11 (13)
	capital	-.10 (26)	-.05 (24)	.14 (11)	.22 (12)	.26 (19)	.44 (4)	-.15 (19)	.33 (16)	.10 (13)
	punct	-.05 (26)	-.28 (24)	.10 (11)	.26 (12)	.16 (19)	.70 (4)	.00 (19)	.47 (16)	-.18 (13)
	lang. usage	-.18 (26)	-.27 (24)	-.18 (11)	-.27 (12)	-.00 (19)	.49 (4)	.04 (19)	.17 (16)	-.44 (13)
	lang. total	-.09 (26)	-.18 (24)	.12 (11)	.05 (12)	.19 (19)	.89 (4)	.00 (19)	.42 (16)	-.12 (13)
	maps	-.14 (26)	-.03 (24)	.28 (11)	.03 (12)	.32 (19)	.64 (4)	-.16 (19)	.46 (16)	.13 (13)
	graphs	-.07 (26)	-.25 (24)	-.02 (11)	-.38 (12)	.27 (19)	.99** (4)	.15 (19)	.57* (16)	-.24 (13)
	references	.00 (26)	-.13 (24)	.33 (11)	-.14 (12)	.28 (19)	.98* (4)	.12 (19)	.58* (16)	-.06 (13)
	work-st total	-.07 (26)	-.17 (24)	.22 (11)	-.20 (12)	.33 (19)	.96* (4)	.06 (19)	.61* (16)	-.06 (13)
	arith concept	-.07 (26)	-.18 (24)	.08 (11)	-.10 (12)	.49* (19)	.78 (4)	.13 (19)	.47 (16)	-.10 (13)
	arith prob	-.05 (26)	-.01 (24)	.14 (11)	-.05 (12)	.33 (19)	.78 (4)	-.11 (19)	.34 (16)	.08 (13)
	arith total	-.08 (26)	-.12 (24)	.13 (11)	-.10 (12)	.50* (19)	.87 (4)	.02 (19)	.48 (16)	.00 (13)
	composite (ITBS)	-.08 (26)	-.17 (24)	.13 (11)	-.01 (12)	.31 (19)	.81 (4)	.10 (19)	.49 (16)	-.11 (13)

TABLE 23 a

EDUCATIONAL DEVELOPMENT	Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Partci in class discussion	General Attitude	Independence
G6: vocabulary	.01 (24)	-.22 (22)	-.14 (11)	.11 (11)	.21 (17)	-.31 (3)	.08 (18)	.37 (15)	-.10 (12)
reading	.15 (24)	-.08 (22)	.23 (11)	.14 (11)	.16 (17)	.99 (3)	.09 (18)	.48 (15)	.22 (12)
spelling	-.04 (24)	-.15 (22)	-.12 (11)	-.02 (11)	.17 (17)	.97 (3)	-.05 (18)	.30 (15)	-.03 (12)
capital.	-.15 (24)	-.09 (22)	-.25 (11)	.08 (11)	.31 (17)	-.06 (3)	-.35 (18)	.37 (15)	.00 (12)
punct.	-.02 (24)	-.02 (22)	.05 (11)	.17 (11)	.19 (17)	.08 (3)	-.14 (18)	.54* (15)	.08 (12)
lang. usage	-.10 (24)	-.22 (22)	-.15 (11)	.26 (11)	.03 (17)	-.50 (3)	.17 (18)	.29 (15)	-.17 (12)
lang. total	-.09 (24)	-.13 (22)	-.17 (11)	.11 (11)	.20 (17)	-.19 (3)	-.14 (18)	.41 (15)	-.03 (12)
maps	.10 (24)	.00 (22)	.08 (11)	.07 (11)	.26 (17)	-.23 (3)	-.23 (18)	.54* (15)	.22 (12)
graphs	.09 (24)	-.08 (22)	.30 (11)	.21 (11)	.05 (17)	.83 (3)	.03 (18)	.59* (15)	.18 (12)
references	.07 (24)	.01 (22)	.16 (11)	.17 (11)	.12 (17)	.58 (3)	-.16 (18)	.60* (15)	.00 (12)
work-st. total	.09 (24)	-.03 (22)	.20 (11)	.17 (11)	.15 (17)	.50 (3)	-.13 (18)	.63* (15)	.13 (12)
arith concept	-.30 (24)	-.35 (22)	.05 (11)	-.28 (11)	.51* (17)	.33 (3)	-.07 (18)	.22 (15)	.45 (12)
arith prob.	-.21 (24)	-.21 (22)	.15 (11)	-.28 (11)	.21 (17)	-.19 (3)	-.05 (18)	.43 (15)	.34 (12
arith total	-.28 (24)	-.29 (22)	.11 (11)	-.30 (11)	.46 (17)	.08 (3)	-.06 (18)	.36 (15)	.45 (12)

TABLE 23 a

EDUCATIONAL DEVELOPMENT		Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Partic in class discussion	General Attitude	Independence
G6	composite (ITBS)	-.01 (24)	-.16 (22)	.04 (11)	.08 (11)	.24 (17)	.50 (3)	-.03 (18)	.49 (15)	.10 (12)
G7	vocabulary	-.07 (24)	-.19 (22)	-.13 (11)	.13 (12)	.15 (17)	.83 (4)	.23 (18)	.31 (16)	-.02 (13)
	reading	-.12 (24)	-.18 (22)	.14 (11)	-.05 (12)	.15 (17)	.46 (4)	.23 (18)	.35 (16)	.13 (13)
	spelling	-.16 (24)	-.27 (22)	-.22 (11)	-.12 (12)	.07 (17)	-.51 (4)	-.07 (18)	.35 (16)	-.26 (13)
	capital.	-.14 (24)	-.03 (22)	-.23 (11)	-.12 (12)	.06 (17)	.07 (4)	-.35 (18)	.46 (16)	-.26 (13)
	punct.	-.09 (24)	.06 (22)	-.04 (11)	-.21 (12)	.35 (17)	.00 (4)	-.19 (18)	.46 (16)	-.08 (13)
	lang. usage	-.24 (24)	-.13 (22)	-.08 (11)	-.09 (12)	.03 (17)	.69 (4)	.10 (18)	.30 (16)	-.38 (13)
	lang. total	-.17 (24)	-.11 (22)	-.17 (11)	-.15 (12)	.15 (17)	.23 (4)	-.15 (18)	.43 (16)	-.28 (13)
	maps	-.00 (24)	-.09 (22)	.22 (11)	-.33 (12)	.30 (17)	.82 (4)	.07 (18)	.52* (16)	.16 (13)
	graphs	-.02 (24)	.22 (22)	.33 (11)	-.01 (12)	.43 (17)	.27 (4)	.01 (18)	.56* (16)	.04 (13)
	references	.02 (24)	-.05 (22)	.04 (11)	.08 (12)	.08 (17)	.86 (4)	.01 (18)	.49 (16)	-.22 (13)
	work-st. total	-.00 (24)	.02 (22)	.22 (11)	-.10 (12)	.30 (17)	.75 (4)	.05 (18)	.56* (16)	,01 (13)
	arith concept	-.19 (24)	-.09 (22)	.18 (11)	-.16 (12)	.42 (17)	.09 (4)	-.09 (18)	.36 (16)	.40 (13)
	arith prob.	.05 (24)	.00 (22)	.32 (11)	-.48 (12)	.39 (17)	.17 (4)	-.17 (18)	.55* (16)	.44 (13)

TABLE 23 a

EDUCATIONAL DEVELOPMENT	Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Part in class discussion	General Attitude	Independence
G7 arith total	-.07 (24)	-.05 (22)	.28 (11)	-.34 (12)	.43 (17)	.14 (4)	-.14 (18)	.49 (16)	.44 (13)
composite (ITBS)	-.10 (24)	-.12 (22)	.04 (11)	-.08 (12)	.25 (17)	.62 (4)	.05 (18)	.46 (16)	.03 (13)
G8 vocabulary	-.08 (26)	-.29 (24)	.22 (11)	.19 (12)	.15 (19)	.69 (4)	.21 (19)	.40 (16)	-.01 (13)
reading	.02 (26)	-.15 (24)	.27 (11)	-.22 (12)	.25 (19)	.92 (4)	.37 (19)	.37 (16)	.29 (13)
spelling	-.12 (26)	-.23 (24)	-.12 (11)	-.14 (12)	.26 (19)	.14 (4)	.11 (19)	.31 (16)	-.16 (13)
capital.	-.11 (26)	-.05 (24)	-.03 (11)	.15 (12)	.10 (19)	.74 (4)	-.23 (19)	.55* (16)	-.25 (13)
punct.	-.04 (26)	-.03 (24)	-.01 (11)	.03 (12)	.20 (19)	.52 (4)	-.11 (19)	.55* (16)	.19 (13)
lang. usage	-.16 (26)	-.31 (24)	.04 (11)	-.04 (12)	.36 (19)	.32 (4)	.19 (19)	.23 (16)	-.47 (13)
lang. total	-.12 (26)	-.17 (24)	-.05 (11)	-.01 (12)	.26 (19)	.53 (4)	-.02 (11)	.46 (16)	-.31 (13)
maps	-.02 (26)	.08 (24)	.03 (11)	-.46 (12)	.22 (19)	-.18 (4)	.02 (11)	.56* (16)	.30 (13)
graphs	-.05 (26)	-.18 (24)	-.13 (11)	-.14 (12)	.41 (19)	-.63 (4)	-.23 (19)	.54* (16)	-.04 (13)
references	.01 (26)	-.07 (24)	.11 (11)	-.07 (12)	.08 (19)	-.05 (4)	.03 (19)	.59* (16)	.07 (13)
work-st. total	-.02 (26)	-.08 (24)	-.00 (11)	-.22 (12)	.28 (19)	-.35 (4)	-.08 (19)	.61* (16)	.09 (13)
arith concept	.01 (26)	-.08 (24)	.28 (11)	-.20 (12)	.38 (19)	.60 (4)	.16 (19)	.52* (16)	.31 (13)

TABLE 23 a

EDUCATIONAL DEVELOPMENT		Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Part in class discussion	General Attitude	Independence
G8	arith prob.	.20 (26)	.15 (24)	.69* (11)	-.28 (12)	.37 (19)	.79 (4)	.31 (19)	.54* (16)	.55* (13)
	arith total	.11 (26)	.05 (24)	.55 (11)	-.36 (12)	.47* (19)	.71 (4)	.29 (19)	.57* (16)	.52 (13)
	composite (ITBS)	-.03 (26)	-.15 (24)	.23 (11)	-.09 (12)	.32 (19)	.87 (4)	.17 (19)	.53* (16)	.11 (13)
G9	soc. concepts	-.06 (30)	-.16 (27)	.30 (11)	.54 (12)	.12 (20)	.91 (5)	.19 (19)	.46 (17)	-.08 (15)
	nat. sci.	-.06 (30)	-.23 (27)	.42 (11)	.72** (12)	.29 (20)	-.49 (5)	.10 (19)	.46 (17)	-.23 (15)
	expression	-.01 (30)	.04 (27)	.36 (11)	.47 (12)	.16 (20)	-.87 (5)	-.12 (19)	.57* (17)	-.22 (15)
	quant.	.01 (30)	-.25 (27)	-.10 (11)	-.38 (12)	.51* (20)	-.16 (5)	-.44 (19)	.42 (17)	-.22 (15)
	reading s.s.	.22 (30)	.06 (27)	.73* (11)	.49 (12)	.37 (20)	-.05 (5)	-.01 (19)	.57* (17)	.35 (15)
	reading n.s.	-.00 (30)	.03 (27)	.62* (11)	.61* (12)	-.04 (20)	.79 (5)	.20 (19)	.72** (17)	.02 (15)
	reading lit.	-.20 (30)	-.13 (27)	-.20 (11)	.39 (12)	.22 (20)	-.34 (5)	.22 (19)	-.01 (17)	.36 (15)
	vocabulary	-.10 (30)	-.29 (27)	.29 (11)	.26 (12)	.35 (20)	-.49 (5)	-.10 (19)	.23 (17)	.17 (15)
	composite (ITBS)	-.03 (30)	-.15 (27)	.47 (11)	.49 (12)	.38 (20)	-.27 (5)	.04 (19)	.55* (17)	.00 (15)
	sources	-.07 (30)	-.08 (27)	.02 (11)	.58* (12)	.23 (20)	-.74 (5)	-.21 (19)	.30 (17)	.09 (15)

TABLE 23 a

EDUCATIONAL DEVELOPMENT	Social Adjustment	Emotional Stability	Discouragement	Responsibility	Self-Confidence	Subject-Matter Progress	Part in class discussion	General Attitude	Independence
G10 soc. concept	-.07 (26)	-.12 (24)	.30 (11)	.19 (12)	.14 (19)	.73 (4)	.35 (19)	.43 (16)	.04 (13)
nat. sci.	-.26 (26)	-.32 (24)	.05 (11)	-.11 (12)	.30 (19)	.17 (4)	.24 (19)	.16 (16)	-.06 (13)
expression	-.13 (26)	-.07 (24)	.21 (11)	.00 (12)	.23 (19)	.17 (4)	.02 (19)	.43 (16)	-.08 (13)
quant.	-.12 (26)	-.13 (24)	.14 (11)	-.61* (12)	.44 (19)	.90 (4)	.07 (19)	.34 (16)	-.09 (13)
reading s.s.	.02 (26)	-.04 (24)	.22 (11)	.30 (12)	.10 (19)	-.94 (4)	.26 (19)	.33 (16)	.43 (13)
reading n.s.	-.34 (26)	-.24 (24)	-.10 (11)	.02 (12)	.25 (19)	.09 (4)	.22 (19)	.08 (16)	-.01 (13)
reading lit.	-.09 (26)	-.28 (24)	-.01 (11)	-.23 (12)	.15 (19)	.46 (4)	.25 (19)	.30 (16)	-.23 (13)
vocabulary	-.17 (26)	-.18 (24)	-.06 (11)	.01 (12)	.23 (19)	.00 (4)	.15 (19)	.25 (16)	.01 (13)
composite (ITBS)	-.18 (26)	-.23 (24)	.13 (11)	-.05 (12)	.29 (19)	.17 (4)	.23 (19)	.36 (16)	-.02 (13)
sources	.09 (26)	.18 (24)	.25 (11)	-.09 (12)	.03 (19)	.68 (4)	-.05 (19)	.50 (16)	-.27 (13)

* p. $<$ .05
** p. $<$ .01

TABLE 23 b

EDUCATIONAL DEVELOPMENT		Sensitive Areas	Attention Needed	Class Discipline	Aggressiveness	Shyness	Encouragement Needed	Cooperativeness	Attention Span
G1	reading (L-C)	.13 (10)	.40 (13)	.53 (10)	.61 (9)	-.50 (10)	.96 (4)	-.48 (10)	.12 (12)
G2	vocabulary	-.999* (3)	-.40 (6)	-- (1)	-- (2)	-- (2)	-- (2)	-.999* (3)	-.22 (7)
	comprehension	-1.00** (3)	-.41 (6)	-- (1)	-- (2)	-- (2)	-- (2)	1.00** (3)	-.14 (7)
	total reading	-.999* (3)	-.45 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.999* (3)	-.18 (7)
	mech. English	-.984 (3)	-.41 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.983 (3)	.47 (7)
	spelling	-.987 (3)	-.65 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.981 (3)	-.29 (7)
	total language	-.998* (3)	-.57 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.998* (3)	.01 (7)
	arith reason.	-.83 (3)	-.88 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.83 (3)	-.11 (7)
	arith fund.	.19 (3)	-.35 (6)	-- (1)	-- (2)	-- (2)	-- (2)	-.19 (3)	.24 (7)
	arith total	-.76 (3)	-.75 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.76 (3)	.15 (7)
	total (CAT)	-.982 (3)	-.65 (6)	-- (1)	-- (2)	-- (2)	-- (2)	.982 (3)	-.07 (7)
G3	vocabulary	-.33 (14)	.07 (21)	.07 (13)	.32 (11)	-.34 (13)	.67 (7)	.37 (14)	.12 (20)
	comprehension	-.27 (14)	.06 (21)	.01 (13)	.18 (11)	-.39 (13)	.67 (7)	.32 (14)	.31 (20)

TABLE 23 b

EDUCATIONAL DEVELOPMENT		Sensitive Areas	Attention Needed	Class Discipline	Aggressiveness	Shyness	Encouragement Needed	Cooperativeness	Attention Span
G3	total reading	-.23 (14)	.09 (21)	.05 (13)	.27 (11)	-.39 (13)	.77* (7)	.32 (14)	.22 (20)
	mech. English	-.28 (14)	.13 (21)	.08 (13)	.25 (11)	-.25 (13)	.65 (7)	.32 (14)	.35 (20)
	spelling	-.49 (14)	.06 (21)	.23 (13)	.54 (11)	-.38 (13)	.20 (7)	.20 (14)	.15 (20)
	total lang.	-.44 (14)	.11 (21)	.21 (13)	.47 (11)	-.36 (13)	.36 (7)	.25 (14)	.24 (20)
	arith reason.	-.22 (14)	.16 (21)	.29 (13)	.43 (11)	-.40 (13)	.51 (7)	.14 (14)	.11 (20)
	arith fund.	-.08 (14)	.08 (21)	.11 (13)	.10 (11)	.02 (13)	.08 (7)	.09 (14)	.11 (20)
	arith total	-.18 (14)	.15 (21)	.27 (13)	.38 (11)	-.32 (13)	.43 (7)	.13 (14)	.12 (20)
	total (Cat)	-.37 (14)	.10 (21)	.17 (13)	.39 (11)	-.40 (13)	.49 (7)	.27 (14)	.21 (20)
G4	vocabulary	-.22 (13)	.15 (20)	.26 (13)	.48 (11)	.42 (12)	.36 (7)	.23 (14)	.03 (20)
	reading	-.22 (13)	.08 (20)	.09 (13)	.31 (11)	-.31 (12)	.51 (7)	.18 (14)	.13 (20)
	spelling	-.15 (13)	.20 (20)	.17 (13)	.47 (11)	-.29 (12)	.30 (7)	-.05 (14)	.30 (20)
	capital.	.00 (13)	-.08 (20)	-.12 (13)	-.02 (11)	.25 (12)	.12 (7)	.12 (14)	.27 (20)
	punct.	-.33 (13)	-.03 (20)	-.24 (13)	-.07 (11)	-.07 (12)	-.05 (7)	.38 (14)	.41 (20)
	lang. usage	-.13 (13)	-.03 (20)	-.20 (13)	-.14 (11)	.12 (12)	-.60 (7)	.35 (14)	.26 (20)

TABLE 23 b

EDUCATIONAL DEVELOPMENT		Sensitive Areas	Attention Needed	Class Discipline	Aggressiveness	Shyness	Encouragement Needed	Cooperativeness	Attention Span
G4	lang. total	-.20 (13)	.03 (20)	-.09 (13)	.13 (11)	-.10 (12)	-.02 (7)	.24 (14)	.36 (20)
	maps	.26 (13)	.12 (20)	.29 (13)	,43 (11)	- .51 (12)	.51 (7)	-.19 (14)	.14 (20)
	graphs	.03 (13)	.18 (20)	.26 (13)	.48 (11)	-.67* (12)	.35 (7)	-.11 (14)	.15 (20)
	reference	-.13 (13)	-.01 (20)	.24 (13)	.45 (11)	-.55 (12)	.18 (7)	.17 (14)	.12 (20)
	work-st. total	.09 (13)	.11 (20)	.28 (13)	.47 (11)	-.62* (12)	.39 (7)	-.07 (14)	.17 (20)
	arith concept	-.27 (13)	-.08 (20)	.01 (13)	.22 (11)	-.28 (12)	.63 (7)	.07 (14)	.49* (20)
	arith prob.	-.44 (13)	.09 (20)	.18 (13)	.22 (11)	-.22 (12)	.31 (7)	-.01 (14)	.47* (20);
	arith total	-.38 (13)	-.00 (20)	.09 (13)	.24 (11)	-.28 (12)	.48 (7)	.01 (14)	.43 (20)
	Composite (ITBS)	-.20 (13)	.10 (20)	.14 (13)	.37 (11)	-.42 (12)	.40 (7)	.15 (14)	.25 (20)
G5	vocabulary	.07 (14)	.14 (21)	.07 (13)	.23 (11)	-.28 (13)	.62 (7)	.31 (14)	-.02 (20)
	reading	-.03 (14)	.08 (21)	.07 (13)	.25 (11)	-.12 (13)	.42 (7)	.33 (14)	.03 (20)
	spelling	-.38 (14)	-.01 (21)	.09 (13)	.16 (11)	.24 (13)	.25 (7)	.27 (14)	.18 (20)
	capital.	-.27 (14)	.09 (21)	-.04 (13)	.08 (11)	.15 (13)	.37 (7)	.36 (14)	.26 (20)
	punct.	-.23 (14)	.01 (21)	-.25 (13)	.04 (11)	.19 (13)	.48 (7)	.53* (14)	.13 (20)
	lang. usage	.27 (14)	.30 (21)	.07 (13)	.38 (11)	.09 (13)	.65 (7)	.14 (14)	.01 (20)

TABLE 23 b

EDUCATIONAL DEVELOPMENT		Sensitive Areas	Attention Needed	Class Discipline	Aggressiveness	Shyness	Encouragement Needed	Cooperativeness	Attention Span
G5	lang. total	-.19 (14)	.10 (21)	-.04 (13)	.17 (11)	-.03 (13)	.49 (7)	.37 (14)	.17 (20)
	maps	-.34 (14)	-.21 (21)	-.33 (13)	-.11 (11)	.12 (13)	.19 (7)	.32 (14)	.56* (20)
	graphs	-.16 (14)	.08 (21)	.08 (13)	.38 (11)	-.19 (13)	.44 (7)	.23 (14)	-.02 (20)
	reference	-.33 (14)	-.10 (21)	-.13 (13)	.10 (11)	-.12 (13)	.48 (7)	.19 (14)	.21 (20)
	work-st. total	-.32 (14)	-.07 (21)	-.12 (13)	.20 (11)	-.08 (13)	.46 (7)	.31 (14)	.29 (20)
	arith concept	-.19 (14)	.02 (21)	.14 (13)	.51 (11)	-.32 (13)	.35 (7)	.09 (14)	-.09 (20)
	arith prob.	-.08 (14)	-.18 (21)	-.23 (13)	-.26 (11)	.27 (13)	.51 (7)	.31 (14)	.28 (20)
	arith total	-.17 (14)	-.08 (21)	-.06 (13)	.14 (11)	-.08 (13)	.41 (7)	.22 (14)	.08 (20)
	composite (ITBS)	-.11 (14)	.06 (21)	.00 (13)	.22 (11)	-.15 (13)	.51 (7)	.34 (14)	.11 (20)
G6	vocabulary	-.01 (13)	-.06 (19)	-.13 (12)	.14 (10)	-.14 (12)	.71 (6)	.44 (13)	-.15 (18)
	reading	-.13 (13)	-.15 (19)	-.16 (12)	-.05 (10)	-.10 (12)	.62 (6)	.46 (13)	.08 (18)
	spelling	-.23 (13)	.02 (19)	.04 (12)	.29 (10)	-.21 (12)	.59 (6)	.33 (13)	-.04 (18)
	capital.	-.02 (13)	-.25 (19)	-.36 (12)	-.34 (10)	.43 (12)	.34 (6)	.40 (13)	.10 (18)
	punct.	-.36 (13)	-.02 (19)	-.17 (12)	.04 (10)	-.15 (12)	.63 (6)	.52 (13)	-.02 (18)

TABLE 23 b

EDUCATIONAL DEVELOPMENT		Sensitive Areas	Attention Needed	Class Discipline	Aggressiveness	Shyness	Encouragement Needed	Cooperativeness	Attention Span
G6	lang. usage	.01 (13)	-.00 (19)	-.24 (12)	.05 (10)	.08 (12)	.80 (6)	.47 (13)	-.06 (18)
	lang. total	-.17 (13)	-.07 (19)	-.21 (12)	.01 (10)	.07 (12)	.68 (6)	.49 (13)	.01 (18)
	maps	-.10 (13)	-.24 (19)	-.19 (12)	-.09 (10)	-.01 (12)	.70 (6)	.33 (13)	.17 (18)
	graphs	-.37 (13)	-.03 (19)	.10 (12)	.03 (10)	-.12 (12)	.43 (6)	.39 (13)	.11 (18)
	reference	-.43 (13)	-.15 (19)	-.22 (12)	-.07 (10)	.17 (12)	.50 (6)	.51 (13)	.07 (18)
	work-st. total	-.35 (13)	-.15 (19)	-.11 (12)	-.04 (10)	.01 (12)	.54 (6)	.46 (13)	.12 (18)
	arith concept	-.02 (13)	-.00 (19)	.12 (12)	.34 (10)	-.36 (12)	.58 (6)	-.07 (13)	.27 (18)
	arith prob.	.08 (13)	.03 (19)	.10 (12)	.20 (10)	-.38 (12)	.32 (6)	-.51 (13)	.13 (18)
	arith. total	.04 (13)	.01 (19)	.11 (12)	.31 (10)	-.43 (12)	.58 (6)	-.25 (13)	.21 (18)
	composite (ITBS)	-.14 (13)	-.11 (19)	-.14 (12)	.07 (10)	-.10 (12)	.67 (6)	.43 (13)	.03 (18)
G7	vocabulary	-.05 (13)	-.01 (19)	-.05 (13)	.08 (11)	-.02 (12)	.50 (7)	.46 (14)	-.09 (19)
	reading	.04 (13)	.10 (19)	.14 (13)	.23 (11)	-.28 (12)	.58 (7)	.24 (14)	.10 (19)
	spelling	.01 (13)	.07 (19)	-.05 (13)	.26 (11)	.02 (12)	.75* (7)	.31 (14)	.04 (19)
	capital	-.08 (13)	.08 (19)	-.11 (13)	.15 (11)	.22 (12)	.70 (7)	.29 (14)	.02 (19)
	punct.	-.00 (13)	.03 (19)	-.08 (13)	.29 (11)	-.07 (12)	.59 (7)	.24 (14)	.14 (19)

TABLE 23 b

EDUCATIONAL DEVELOPMENT	Sensitive Areas	Attention Needed	Class discipline	Aggressiveness	Shyness	Encouragement Needed	Cooperativeness	Attention Span
G7 Lang. Usage	-.13 (13)	.19 (19)	-.01 (13)	.27 (11)	.09 (12)	.58 (7)	.21 (14)	-.01 (19)
lang. total	-.05 (13)	.10 (19)	-.07 (13)	.28 (11)	.08 (12)	.71 (7)	.30 (14)	.05 (19)
maps	-.16 (13)	.10 (19)	.17 (13)	.47 (11)	-.44 (12)	.61 (7)	-.08 (14)	.13 (19)
graphs	-.36 (13)	-.30 (19)	-.32 (13)	-.04 (11)	.03 (12)	.61 (7)	.37 (14)	.40 (19)
reference	-.29 (13)	.01 (19)	-.12 (13)	.18 (11)	.12 (12)	.52 (7)	.46 (14)	.03 (19)
work-st. total	-.31 (13)	-.09 (19)	-.09 (13)	.23 (11)	-.14 (12)	.65 (7)	.32 (14)	.21 (19)
arith concept	-.20 (13)	.12 (19)	.21 (13)	.32 (11)	-.34 (12)	.65 (7)	.02 (14)	.25 (19)
arith prob	-.31 (13)	-.10 (19)	.07 (13)	.17 (11)	-.33 (12)	.32 (7)	.03 (14)	.31 (19)
arith total	-.29 (13)	-.04 (19)	.06 (13)	.25 (11)	-.36 (12)	.52 (7)	.03 (14)	.30 (19)
composite (ITBS)	-.12 (13)	.02 (19)	.00 (13)	.22 (11)	-.12 (12)	.66 (7)	.34 (14)	.11 (19)
G8 vocabulary	.04 (14)	.20 (21)	.02 (13)	.28 (11)	-.21 (13)	.40 (7)	.34 (14)	.06 (20)
reading	.18 (14)	.08 (21)	.22 (13)	.38 (11)	-.45 (13)	.26 (7)	.05 (14)	.10 (20)
spelling	-.13 (14)	-.00 (21)	-.08 (13)	.27 (11)	-.13 (13)	.55 (7)	.30 (14)	.03 (20)
capital	-.23 (14)	-.01 (21)	-.47 (13)	-.25 (11)	.44 (13)	.83* (7)	.53* (14)	.31 (20)
punct.	-.22 (14)	-.08 (21)	-.42 (13)	-.11 (11)	.12 (13)	.62 (7)	.49 (14)	.18 (20)

TABLE 23 b

	EDUCATIONAL DEVELOPMENT	Sensitive areas	Attention needed	Class discipline	Aggressiveness	Shyness	Encouragement meeded	Cooperativeness	Attention Span
G8	lang. usage	.06 (14)	-.02 (21)	-.08 (13)	.25 (11)	.19 (13)	.12 (7)	.24 (14)	-.03 (20)
	lang. total	-.16 (14)	-.03 (21)	-.30 (13)	.06 (11)	.20 (13)	.62 (7)	.45 (14)	.14 (20)
	maps	.25 (14)	-.12 (21)	-.01 (13)	.19 (11)	-.24 (13)	.76 * (7)	.12 (14)	.16 (20)
	graphs	.22 (14)	-.24 (21)	-.27 (13)	-.06 (11)	.22 (13)	.56 (7)	.41 (14)	-.00 (20)
	reference	-.31 (14)	-.11 (21)	-.22 (13)	-.19 (11)	.11 (13)	.56 (7)	.45 (14)	.21 (20)
	work-st. total	.06 (14)	-.20 (21)	-.19 (13)	-.04 (11)	.07 (13)	.74 (7)	.42 (14)	.13 (20)
	arith concept	-.10 (14)	.12 (21)	.18 (13)	.36 (11)	-.37 (13)	.21 (7)	.01 (14)	.15 (20)
	arith prob	-.40 (14)	-.16 (21)	.16 (13)	.25 (11)	-.53 (13)	-.43 (7)	-.26 (14)	.23 (20)
	arith total	-.31 (14)	-.16 (21)	.22 (13)	.41 (11)	-.68** (13)	-.21 (7)	-.22 (14)	.21 (20)
	composite (ITBS)	-.03 (14)	-.00 (21)	-.02 (13)	.24 (11)	-.23 (13)	.49 (7)	.31 (14)	.15 (20)
G9	soc. concept	-.02 (15)	.06 (21)	-.14 (14)	-.07 (13)	.25 (16)	-.06 (7)	.53* (15)	.02 (22)
	nat. sci.	-.34 (15)	-.03 (21)	-.14 (14)	-.03 (13)	.18 (16)	-.18 (7)	.44 (15)	.02 (22)
	expression	-.54* (15)	-.07 (21)	-.38 (14)	-.18 (13)	.31 (16)	.21 (7)	.51* (15)	.23 (22)
	quant	-.40 (15)	-.06 (21)	.12 (14)	.36 (13)	-.13 (16)	.84* (7)	.05 (15)	.22 (22)
	reading s.s.	-.60* (15)	-.23 (21)	-.22 (14)	-.02 (13)	-.10 (16)	-.56 (7)	.38 (15)	.22 (22)
	reading n.s.	-.40 (15)	.09 (21)	-.47 (14)	-.29 (13)	.16 (16)	-.20 (7)	.32 (15)	.43* (22)

TABLE 23 b

	EDUCATIONAL DEVELOPMENT								
G9	reading lit.	-.07 (15)	.16 (21)	-.09 (14)	.22 (13)	-.19 (16)	.04 (7)	.31 (15)	.08 (22)
	vocabulary	-.09 (15)	-.05 (21)	-.00 (14)	.21 (13)	-.13 (16)	.16 (7)	.01 (15)	.16 (22)
	composite (ITED)	-.45 (15)	-.08 (21)	-.19 (14)	.05 (13)	.04 (16)	-.02 (7)	.50 (15)	.20 (22)
	sources	-.26 (15)	-.09 (21)	-.35 (14)	.06 (13)	.15 (16)	.33 (7)	.56* (15)	.03 (22)
G10	soc. concepts	.06 (14)	.11 (21)	.04 (13)	.07 (11)	-.07 (13)	.34 (7)	.39 (14)	.11 (20)
	nat. sci.	.18 (14)	.23 (21)	.21 (13)	.53 (11)	-.46 (13)	.40 (7)	-.05 (14)	-.13 (20)
	expression	-.35 (14)	.15 (21)	.02 (13)	.34 (11)	-.18 (13)	.54 (7)	.18 (14)	.20 (20)
	quant.	-.05 (14)	.09 (21)	.50 (13)	.44 (11)	-.42 (13)	.34 (7)	-.17 (14)	.00 (20)
	reading s.s.	.30 (14)	-.12 (21)	-.27 (13)	-.18 (11)	.06 (13)	.47 (7)	.44 (14)	.00 (20)
	reading n.s.	.17 (14)	.14 (21)	-.01 (13)	.33 (11)	-.26 (13)	.56 (7)	.12 (14)	.09 (20)
	reading lit.	.07 (14)	.06 (21)	-.02 (13)	.39 (11)	-.20 (13)	.55 (7)	.21 (14)	.02 (20)
	vocabulary	.22 (14)	.17 (21)	.05 (13)	.26 (11)	-.17 (13)	.55 (7)	.21 (14)	.16 (20)
	composite (ITED)	.08 (14)	.11 (21)	.03 (13)	.31 (11)	-.26 (13)	.56 (7)	.24 (14)	.08 (20)
	sources	-.27 (14)	-.15 (21)	-.24 (13)	-.13 (11)	.26 (13)	.61 (7)	.35 (14)	.24 (20)

* $p < .05$

** $p < .01$

The characteristic of discouragement was weighted 1 for easily discouraged, 2 for occasionally discouraged, and 3 for not easily discouraged. The above correlations appeared to indicate, therefore, that individuals who were easily discouraged at the kindergarten level tended to have greater difficulty in these areas: grade 4 language usage, grade 8 arithmetic problem, and grade 9 interpretation of reading materials in social studies and natural sciences.

D-1-d Correlates of Responsibility

Significant correlates of the attribute responsibility, as measured at the kindergarten level, found were grade 1 reading ($r = -.74$, $df = 7$, p .05); grade 9 general background in the natural sciences ($r = .72$, $df = 10$, p .01), interpreting reading materials in the natural sciences ($r = .61$, $df = 10$, p .05), using sources of information ($r = .58$, $df = 10$, p .05); and grade 10 quantitative thinking ($r = -.61$, $df = 10$, p .05).

Since the weighting of the attribute responsibility was 1 for rarely carries out responsibilities, 2 for usually carries out responsibilities, and 3 for always carries out responsibilities, those individuals who showed higher degree of responsibility at the kindergarten level tended to do poorly in grade 1 reading and grade 10 quantitative thinking. Whereas, individuals showing lower level of responsibility at the kindergarten level tended to have more problems in their general background in the natural sciences, interpretation of reading materials in the natural sciences, and use of sources of information at the ninth grade level.

D-1-e Correlates of Self-Confidence

Self-confidence at the kindergarten level was found to have the following correlates: grade 2 arithmetic reasoning ($r = .91$, $df = 3$, $p < .05$); grade 4 use of references ($r = .48$, $df = 16$, $p < .05$), arithmetic concept ($r = .47$, $df = 16$, $p < .05$); grade 5 arithmatic concept ($r = .49$, $df = 17$, $p < .05$); grade 5 arithmetic concept ($r = .49$, $df = 17$, $p < .05$), arithmetic total ($r = .50$, $df = 17$, $p < .05$); grade 6 arithmetic concept ($r = .51$, $df = 15$, $p < .05$); grade 8 arithmetic total ($r = .47$, $df = 15$, $p < .05$); and grade 9 quantitative thinking ($r = .51$, $df = 18$, $p < .05$).

Self-confidence was weighted as follows: 1 for rarely shows self-confidence, 2 for usually shows self-confidence, and 3 for always shows self-confidence. The findings revealed that individuals who rarely showed self-confidence at the kindergarten level encountered significantly more problems in the area of arithmetic and quantitative thinking throughout most of the stages covered in the study (grades 2, 4, 5, 6, 8, 9).

D-1-f Correlates of Subject-Matter Progress

Subject-matter progress at the kindergarten level was found to be a significant determinant of grade 3 vocabulary ($r = 1.00$, $df = 2$, $p < .01$), arithmetic reasoning ($r = .98$, $df = 2$, $p < .05$), arithmetic total ($r = .96$, $df = 2$, $p < .05$); grade 4 reading ($r = .99$, $df = 2$, $p < .05$), language usage ($r = .96$, $df = 2$, $p < .05$); and grade 5 graphs ($r = .99$, $df = 2$, $p < .01$); references ($r = .98$, $df = 2$, $p < .05$), work-study total ($r = .96$, $df = 2$, $p < .05$).

Subject-matter progress was quantified as follows: 1 for below average, 2 for average, and 3 for above average. The

findings revealed that the poorer the subject matter progress shown at the kindergarten level the more difficulty it would become for the individuals to catch up with others in vocabulary and arithmatic at the third grade, reading and language usage at the fourth grade, and work-study skills at the fifth grade level.

D-1-g Correlates of Participation in Class Discussion

The only significant correlate of participation in class discussion, as measured at the kindergarten level, was language usuage at grade 4 ($r = .58$, $df = 16$, $p < .05$). Individuals who rarely participated in the kindergarten class discussion tended to have more difficulty in language usage at the fourth grade level.

D-1-h Correlates of General Attitude

Individuals' general attitude shown at kindergarten proved to be a significant determinant of a large number of measures of educational achievement and development.

Significant correlates found were as follows: grade 2 total achievement ($r = .95$, $df = 2$, $p < .05$); grade 3 vocabulary ($r = .54$, $df = 1r$, $p < .05$), comprehension ($r = .53$, $df = 14$, $p < .05$), total reading ($r = .51$, $df = 14$, $p < .05$), mechanics of English ($r = .62$, $df = 14$, $p < .05$), total achievement ($r = .50$, $df = 14$, $p < .05$); grade 4 vocabulary ($r = .50$, $df = 14$, $p < .05$), reading ($r = .52$, $df = 14$, $p < .05$), punctuation ($r = .54$, $df = 1r$, $p < .05$), language usage ($r = .64$, $df = 14$, $p < .01$); grade 5 graphs ($r = .57$, $df = 1r$, $p < .05$), references ($r = .58$, $df = 14$, $p < .05$), work-study total ($r = .61$, $df = 14$, $p < .05$); grade 6 punctuation ($r = .54$, $df = 13$, $p < .05$, maps ($r = .54$, $df = 13$, $p < .05$), graphs ($r = .59$, $df = 1e$, $p < 05$), references ($r = .60$, $df = 13$, $p < .05$), work-study total ($r = .63$, $df = 13$, $p < .05$);

grade 7 maps (r= .52, df= 14, p < .05), graphs (r= .56, df= 14, p < .05), work-study total (r= .56, df= 14, p < .05), arithmetic problem (r= .55, df= 14, p < .05); grade 8 capitalization (r= .55, df= 14, p < .05), maps (r= .56, df= 14, p < .05), graphs (r= .54, df= 14, p < .05), references (r= .59, df= 14, p < .05), work-total (r= .61, df= 14, p < .05), arithmetic concept (r= .52, df= 14, p < .05), arithmetic problem (r= .54, df= 14, p < .05), arithmetic total (r= .57, df= 14, p < .05), composite measure (r= .53, df= 14, p < .05); and grade 9 expression (r= .57, df= 15, p < .05), reading social studies (r= .57, df= 15, p < .05), reading natural sciences (r= .72, df= 15, p < .01), composite measure (r= .55, df= 15, p < .05).

Poor, satisfactory, and good general attitude were weighted 1, a, and 3, respectively. The poorer the individual's general attitude shown at the kindegarten level the more difficult would be his overall educational development at grades 2, 3, 8, and 9 in general and his achievement in reading and language at grade 4, his development of work-study skills at grades 6, 7, and 8, his arithmetic achievement at grade 8, and his development of skills concerning expression as well as interpretation of reading materials in the social studies and natural sciences at grade 9 in particular.

D-1-i Correlates of Independence

Two significant correlates of independence found were grade 2 arithmetic reasoning (r= .96, df= 2, p < .05) and grade 8 arithmetic problem (r= .55, df= 11, p < .05). The characteristic of independence was weighted as follows: 1 dependent upon others, 2 some dependence, and 3 independent of others. Individuals who tended to depend upon others at kindergarten were found to have more problems in the area of arithmetic at the second and eighth grade levels.

D-1-j Correlates of Sensitive Areas

Overweight, speech problem etc. were considered as sensitive areas. No sensitive areas, some sensitive areas, and a lot of sensitive areas were weighted 1, 2, and 3, respectively.

Individuals having more sensitive areas at kindergarten tended to perform poorly in grade 2 vocabulary ($r= -.999$, $df= 1$, $p.<105$), comprehension ($r= -1.00$, $df= 1$, $p < .01$), total reading ($r= -.999$, $df= 1$, $p<.05$), total language ($r= -.998$, $df= 1$, $p<.05$), and grade 9 expression ($r= -.54$, $df= 13$, $p<.05$), and reading social studies ($r= -.60$, $df= 13$, $p<.05$).

D-1-k Correlates of the Amount of Attention Needed

None of the 116 measures of educational achievement and development correlated significantly with the amount of attention needed at the kindergarten level.

D-1-l Correlates of the Amount of Class Discipline

Disruptive behavior in the kindergarten class did not correlate significantly with any of the 116 measures of educational achievement and development.

D-1-m Correlates of Agressiveness

Agressiveness shown at kindergarten did not correlate significantly with any of the 116 measures of educational achievement and development.

D-1-n Correlates of Shyness

Individuals who were usually shy at the kindergarten level tended to have more problems in reading graphs ($r= -.67$, $df= 10$, $p < .05$) and overall work-study skills ($r= -.62$, $df= 10$, $p < 05$) at the fourth grade and in total arithmetic achievement ($r= -.68$, $df= 11$, $p<.05$) at the eighth grade level.

D-1-o Correlates of the Amount of Encouragement Needed

Little encouragement needed, some encouragement needed, and

a lot of encouragement needed were three categories weighted 1, 2, and 3 respectively, in the correlational analyses.

Significant correlates of this attribute found were grade 3 total reading ($r= .77$, $df= 5$, $p< 105$), grade 7 spelling ($r= .75$, $df= 5$, $p<.05$), grade 8 capitalization ($r= .83$, $df= 5$, $p<.05$), maps ($r= .76$, $df= 5$, $p<.05$), and grade 9 quantitative thinking ($r= .84$, $df= 5$, $p<.05$).

Individuals who needed little encouragement at the kindergarten level tended to have more problems in reading at the third grade, capitalization and reading maps at the eighth grade, and quantitative thinking at the ninth grade.

D-1-p Correlates of Cooperativeness

Cooperativeness as an attribute shown at the kindergarten level proved to be a significant determinant of grade 2 vocabulary ($r= .999$, $df= 1$, $p<.05$), comprehension ($r= 1.00$, $df= 1$, $p<.05$), total reading ($r= .99$, $df= 1$, $p<.05$), total language ($r= .998$, $df= 1$, $p<.05$), grade 5 punctuation ($r= .53$, $df= 12$, $p<.05$), and grade 8 capitalization ($r= .53$, $df= 12$, $p<.05$), and grade 9 social concepts ($r= .53$, $df= 13$, $p< .05$), expression ($r= .51$, $df= 13$, $p<.05$), sources ($r= .56$, $df= 13$, $p<.05$).

The three point weighting of the characteristic cooperativeness was as follows: 1 noncooperative, 2 usually cooperative, and 3 always cooperative. Individuals with more or less noncooperative characteristics at the kindergarten level tended to have more problems in reading and language at the second grade, punctuation at the fifth grade, capitalization at the eighth grade, and understanding basic social concepts, appropriateness of expression, and use of sources of information at the ninth grade level.

D-1-q Correlates of Attention Span

Four significant correlates of attention span found were grade 4 arithmetic concept ($r = .49$, $df = 18$, $p < .05$), arithmetic problem ($r = .47$, $df = 18$, $p < .05$), grade 5 maps ($r = .56$, $df = 18$, $p < .05$), and grade 9 reading materials in natural sciences ($r = .43$, $df = 20$, $p < .05$).

With short attention span, average attention span, and wide attention span weighted 1, 2, and 3, these findings revealed that individuals having shorter attention span tended to have more difficulty in arithmetic concept and problem at the fourth grade, reading maps at the fifth grade, and interpreting reading materials in the natural sciences at the ninth grade level.

D-2. Preschool Characteristics Given by Parents as Correlates of Educational Development

Seven variables examined, through the parent interview in 1960, when the subjects of this study were enrolled in kindergarten were parents' attitude toward children (weighted 1 indifferent, 2 somewhat positive, 3 very positive), sibling relationship (weighted 1 not so good, 2 good, 3 very good), handling hassles (weighted 1 no involvement, 2 little involvement, 3 a lot of involvement), family influences other than parents (weighted 1 no influences, 2 some influences, 3 a lot of influences), peer relationship (weighted 1 poor, 2 average, 3 good), facing difficult situations (weighted 1 usually discouraged, 2 ocassionally discouraged, 3 rarely discouraged), and dependence-independence in daily routine (weighted 1 dependent on parents, 2 some dependence on parents, 3 independent of parents).

Correlational analyses were carried out between each of these seven characteristics and each of the 116 measures of educational achievement and development. Table 24 summarizes the results.

D-2-a. Correlates of Parents' Attitude toward Children

As can be seen in Table 24, parents' attitude toward children during the preschool period proved to have a profound effect on the children's development in the area of arithmetic. Individuals having parents with very positive attitude at the kindergarten level seemed to have more difficulty in arithmetic at grades 2, 6, 7, 8.

Significant correlates found were as follows: grade 2 arithmetic total ($r = -.95$, $df = 2$, $p < .05$), grade 6 arithmetic total ($r = .76$, $df = 5$, $p < .05$), grade 7 arithmetic concept ($r = -.76$, $df = 5$, $p < .05$),

and grade 8 arithmetic concept (r= -.80, df= 6, p <.05), arithmetic problem (r= -.84, df= 6, p<.01), and arithmetic total (r= -.85, df= 6, p<.01).

D-2-b Correlates of Sibling Relationship

Two measures of educational achievement were found to be significant correlates of sibling relationship. They were grade 3 comprehension (r= -.83, df= 4, p<.05), and grade 4 composite score of the Iowa Tests of Basic Skills (r= -.80, df= 5, p<.05). Individuals having very good preschool sibling relationship tended to have more problems in comprehension at the third grade and overall academic achievement at the fourth grade level.

D-2-c Correlates of Handling Hassles by Parents

Parents' handling of children's hassels at home proved to be a powerful variable relating to a large number of measures of educational achievement and development.

Significant correlates of this variable found were grade 2 vocabulary (r= .95, df= 2, p <.05), comprehension (r= .95, df= 2, p<.05), total reading (r= .95, df= 2, p <05), spelling (r= .97, df= 2, p<.05), grade 3 spelling (r= .82, df= 4, p <.05), total language (r= .88, df= 4, p<.05), grade 4 spelling (r= .88, df= 4, < .05), capitalization (r= .81, df= 4, p <05), language total (r= .82, df= 4, p <05), grade 5 reading (r= .81, df= 4, p<.05), spelling (r= .94, df= 4, p <.01), language total (r= .89, df= 4, p<.05), arithmetic total, (r= .83, df= 4, p <.05), composite score (r= .90, df= 4, p<.05), grade 6 spelling (r= .85, df= 4, p< .05), language usage (r= .83, df= 4, p <.05), language total (r= .95, df= 4, p<.01), references (r= .98, df= 4, p <.01), work-study total (r= .87, df= 4, p <05), grade 7 punctuation (r= .95, df= 4, p<.01), language usage (r= .85, df= 4, p <05), language total

(r= .98, df= 4, p<.01), references (r= .87, df= 4, p<.05), composite score (r= .97, df= 4, p<.01), grade 8 capitalization (r= .82, df= 4, p <.05), language usage (r= .87, df= 4, p<.05), language total (r= .94, df= 4, p<.01), grade 10 sources (r= .90, df= 4, p <.05).

Individuals whose parents would not involve in the handling of the children's hassles during the preschool period seemed to have more difficulty in the development of verbal skills (vocabulary, comprehension, spelling, reading, language usage, etc.) at grades 2, 3, 4, 5, 6, 7, and 8. They also showed more difficulty in arithmetic at grade 5, work-study skills at grades 6 and 10, and overall development at grades 5 and 7.

D-2-d Correlates of Family Influences other than Parents

No significant correlation was found between this variable and any of the 116 measures of educational achievement and development.

TABLE 24

Correlations between Preschool Characteristics given by Parents and Educational Development Measured at Grades 1-10

(Figure in Parentheses Indicates Number of cases)

Educational development	Parent's Attitude toward children	Sibling relationship	Hassless	Family Influence other than parents	Peer relationship	Facing difficult Situation	Independence (Daily routine)
G 1 reading (L-C)	- (2)	- (2)	- (1)	- (2)	- (2)	- (2)	- (2)
G 2 vocabulary	-.61 (4)	-.50 (4)	-.95* (4)	- (3)	-.61 (4)	.68 (4)	- (4)
comprehension	-.46 (4)	-.73 (4)	.95* (4)	- (3)	-.46 (4)	.42 (4)	- (4)
total reading	-.55 (4)	-.65 (4)	.95* (4)	- (3)	-.55 (4)	.52 (4)	- (4)
mech. English	.04 (4)	-.93 (4)	.20 (4)	- (3)	.04 (4)	-.62 (4)	- (4)
spelling	-.28 (4)	-.71 (4)	.97* (4)	- (3)	-.28 (4)	.37 (4)	- (4)
total language	-.19 (4)	-.85 (4)	.88 (4)	- (3)	-.19 (4)	.14 (4)	- (4)
arith. reason	-.66 (4)	-.84 (4)	.66 (4)	- (3)	-.66 (4)	.16 (4)	- (4)
arith. fund.	-.94 (4)	.14 (4)	.28 (4)	- (3)	-.94 (4)	.77 (4)	- (4)
arith. total	-.95* (4)	-.43 (4)	.57 (4)	- (3)	-.95* (4)	.55 (4)	- (4)
total (CAT)	-.61 (4)	-.71 (4)	.90 (4)	- (3)	-.61 (4)	.45 (4)	- (4)
G 3 Vocabulary	-.02 (6)	-.53 (6)	.71 (6)	- (5)	-.66 (6)	-.07 (6)	- (6)

TABLE 24

Educational development		Parent's Attitude toward children	Sibling relationship	Hassless	Family Influence other than parents	Peer relationship	Facing difficult Situation	Independence (Daily routine)
G3	comprehension	-.45 (6)	-.83* (6)	.34 (6)	- (5)	-.56 (6)	-.21 (6)	- (6)
	total reading	-.30 (6)	-.74 (6)	.58 (6)	- (5)	-.68 (6)	-.13 (6)	- (6)
	mech. English	-.37 (6)	-.35 (6)	.83 (6)	- (5)	-.84* (6)	.07 (6)	- (6)
	spelling	-.16 (6)	-.73 (6)	.82* (6)	- (5)	-.35 (6)	-.16 (6)	- (6)
	total language	-.21 (6)	-.64 (6)	.88* (6)	- (5)	-.52 (6)	-.10 (6)	- (6)
	arith reason.	-.38 (6)	-.45 (6)	.18 (6)	- (5)	-.60 (6)	-.47 (6)	- (6)
	arith fund.	-.80 (6)	-.55 (6)	.47 (6)	- (5)	-.58 (6)	.21 (6)	- (6)
	arith total	-.67 (6)	-.59 (6)	.30 (6)	- (5)	-.67 (6)	-.17 (6)	- (6)
	total (CAT)	-.35 (6)	-.70 (6)	.70 (6)	- (5)	-.67 (6)	-.14 (6)	- (6)
G 4	vocabulary	.38 (7)	-.64 (7)	.58 (6)	- (6)	-.51 (7)	-.50 (7)	- (7)
	reading	-.25 (7)	-.65 (7)	.55 (6)	- (6)	-.17 (7)	.38 (7)	- (7)
	spelling	-.09 (7)	-.60 (7)	.88* (6)	- (6)	-.34 (7)	-.24 (7)	- (7)
	capital.	.30 (7)	.08 (7)	.81* (6)	- (6)	-.44 (7)	-.30 (7)	- (7)
	punct.	-.45 (7)	-.69 (7)	.28 (6)	- (6)	-.05 (7)	-.21 (7)	- (7)

TABLE 24 (Cont'd)

Educational development		Parent's Attitude toward children	Sibling relationship	Hassless	Family Influence other than parents	Peer relationship	Facing difficult Situation	Independence (Daily routine)
G4	lang. usage	-.33 (7)	-.38 (7)	.13 (6)	- (6)	-.37 (7)	.64 (7)	- (7)
	lang. total	-.22 (7)	-.64 (7)	.82* (6)	- (6)	-.46 (7)	-.11 (7)	- (7)
	maps	-.68 (7)	-.42 (7)	.35 (6)	- (6)	-.33 (7)	.66 (7)	- (7)
	graphs	-.46 (7)	-.74 (7)	.54 (6)	- (6)	-.16 (7)	.38 (7)	- (7)
	references	-.32 (7)	-.29 (7)	.12 (6)	- (6)	.24 (7)	.50 (7)	- (7)
	work-st. total	-.55 (7)	-.61 (7)	.45 (6)	- (6)	-.18 (7)	.51 (7)	- (7)
	arith concept	-.71 (7)	-.66 (7)	.50 (6)	- (6)	-.48 (7)	.18 (7)	- (7)
	arith prob	-.70 (7)	-.50 (7)	.46 (6)	- (6)	-.10 (7)	.11 (7)	- (7)
	arith total	-.73 (7)	-.60 (7)	.49 (6)	- (6)	-.29 (7)	.13 (7)	- (7)
	composite (ITBS)	-.36 (7)	-.80* (7)	.67 (6)	- (6)	-.40 (7)	.13 (7)	- (7)
G 5	vocabulary	.12 (7)	-.54 (7)	.55 (6)	- (6)	-.27 (7)	.28 (7)	- (7)
	reading	.34 (7)	-.28 (7)	.81* (6)	- (6)	-.19 (7)	.10 (7)	- (7)
	spelling	-.03 (7)	-.44 (7)	.94* (6)	- (6)	-.26 (7)	-.09 (7)	- (7)
	capital.	.30 (7)	-.36 (7)	.72 (6)	- (6)	-.40 (7)	-.68 (7)	- (7)

TABLE 24 (Cont'd)

Educational development	Parent's Attitude toward children	Sibling relationship	Hassless	Family Influence other than parents	Peer relationship	Facing difficult Situation	Independence (Daily routine)
G5 punct.	.25 (7)	-.56 (7)	.74 (6)	- (6)	-.32 (7)	-.49 (7)	- (7)
lang. usage	.29 (7)	.25 (7)	.61 (6)	- (6)	-.23 (7)	.16 (7)	- (7)
lang. total	.01 (7)	-.58 (7)	.89* (6)	- (6)	-.39 (7)	.03 (7)	- (7)
maps	-.66 (7)	-.56 (7)	.61 (6)	- (6)	-.45 (7)	.07 (7)	- (7)
graphs	-.47 (7)	-.05 (7)	.55 (6)	- (6)	.14 (7)	.76* (7)	- (7)
references	-.40 (7)	-.23 (7)	.75 (6)	- (6)	-.33 (7)	.62 (7)	- (7)
work-st. total	-.61 (7)	-.35 (7)	.75 (6)	- (6)	-.27 (7)	.58 (7)	- (7)
arith. concept	-.34 (7)	.09 (7)	.78 (6)	- (6)	.03 (7)	.71 (7)	- (7)
arith. prob.	-.56 (7)	-.34 (7)	.76 (6)	- (6)	-.68 (7)	.11 (7)	- (7)
arith. total	-.53 (7)	-.11 (7)	.83* (6)	- (6)	-.32 (7)	.55 (7)	- (7)
composite (ITBS)	-.07 (7)	-.43 (7)	.90* (6)	- (6)	-.31 (7)	.27 (7)	- (7)

TABLE 24 (Cont'd)

Educational development		Parent's Attitude toward children	Sibling relationship	Hassless	Family Influence other than parents	Peer relationship	Facing difficult Situation	Indepencence (Daily routine)
G 6	vocabulary	.45 (7)	-.52 (7)	.49 (6)	- (6)	-.08 (7)	.02 (7)	- (7)
	reading	-.17 (7)	-.67 (7)	.53 (6)	- (6)	-.17 (7)	.41 (7)	- (7)
	spelling	.19 (7)	-.36 (7)	.85* (6)	- (6)	-.01 (7)	-.09 (7)	- (7)
	capital	-.01 (7)	.51 (7)	.53 (6)	- (6)	-.15 (7)	.09 (7)	- (7)
	punct.	-.41 (7)	-.09 (7)	.66 (6)	- (6)	-.84* (7)	.03 (7)	- (7)
	lang. usage	.09 (7)	-.22 (7)	.83* (6)	- (6)	-.26 (7)	-.05 (7)	- (7)
	lang. total	-.04 (7)	-.04 (7)	.95** (6)	- (6)	-.37 (7)	.02 (7)	- (7)
	maps	-.44 (7)	-.53 (7)	.78 (6)	- (6)	-.37 (7)	.42 (7)	- (7)
	graphs	-.48 (7)	-.52 (7)	.68 (6)	- (6)	-.29 (7)	.54 (7)	- (7)
	references	-.16 (7)	-.08 (7)	.98** (6)	- (6)	-.27 (7)	.20 (7)	- (7)
	work-st. total	-.35 (7)	-.40 (7)	.87* (6)	- (6)	.34 (7)	-.11 (7)	- (7)
	arith. concept	-.75 (7)	-.51 (7)	.58 (6)	- (6)	-.24 (7)	.48 (7)	- (7)
	arith. prob.	-.73 (7)	-.20 (7)	.43 (6)	- (6)	-.42 (7)	.74 (7)	- (7)
	arith. total	-.78* (7)	-.36 (7)	.49 (6)	- (6)	-.38 (7)	.66 (7)	- (7)

TABLE 24 (Cont'd)

Educational development	Parent's Attitude toward children	Sibling relationship	Hassles	Family Influence other than parents	Peer relationship	Facing difficult Situations	Independence (Daily routine)
G6 composite (ITBS)	-.19 (7)	-.52 (7)	.80 (6)	- (6)	-.29 (7)	.38 (7)	- (7)
G 7 vocabulary	.43 (7)	-.43 (7)	.53 (6)	- (6)	.01 (7)	.12 (7)	- (7)
reading	-.04 (7)	-.43 (7)	.61 (6)	- (6)	-.16 (7)	.49 (7)	- (7)
spelling	.25 (7)	-.27 (7)	.91 (6)	- (6)	-.32 (7)	-.13 (7)	- (7)
capital	.14 (7)	.18 (7)	.79 (6)	- (6)	.18 (7)	.03 (7)	- (7)
punct.	-.07 (7)	-.07 (7)	.95** (6)	- (6)	-.60 (7)	-.07 (7)	- (7)
lang. usage	-.26 (7)	.03 (7)	.85* (6)	- (6)	-.59 (7)	.10 (7)	- (7)
lang. total	.03 (7)	-.03 (7)	.98** (6)	- (6)	-.36 (7)	-.01 (7)	- (7)
maps	-.75 (7)	-.21 (7)	.57 (6)	- (6)	-.02 (7)	.48 (7)	- (7)
graphs	-.09 (7)	.04 (7)	.20 (6)	- (6)	.43 (7)	-.18 (7)	- (7)
reference	-.01 (7)	-.27 (7)	.87* (6)	- (6)	-.45 (7)	-.24 (7)	- (7)

TABLE 24 (Cont'd)

Educational development		Parent's Attitude toward children	Sibling relationship	Hassles	Family Influence other than parents	Peer relationship	Facing difficult situation	Independence (daily routine)
G7	work-st. total	-.28 (7)	-.17 (7)	.68 (6)	- (6)	.05 (7)	-.06 (7)	- (7)
	arith. concept	-.76* (7)	-.31 (7)	.63 (6)	- (6)	-.14 (7)	.53 (7)	- (7)
	arith. prob.	-.54 (7)	.40 (7)	.18 (6)	- (6)	.15 (7)	.59 (7)	- (7)
	arith. total	-.73 (7)	.03 (7)	.52 (6)	- (6)	-.02 (7)	.62 (7)	- (7)
	composite (ITBS)	-.16 (7)	-.29 (7)	.97** (6)	- (6)	-.16 (7)	.30 (7)	- (7)
G8	vocabulary	.19 (8)	-.69 (8)	.58 (6)	-.35 (7)	-.20 (8)	.07 (7)	.07 (8)
	reading	-.45 (8)	-.56 (8)	.12 (6)	.40 (7)	-.36 (8)	.26 (7)	-.42 (8)
	spelling	.30 (8)	-.38 (8)	.78 (6)	.04 (7)	-.13 (8)	-.13 (7)	-.08 (8)
	capital	-.56 (8)	-.14 (8)	.82* (6)	.45 (7)	-.03 (8)	.08 (7)	-.46 (8)
	punct.	.45 (8)	-.18 (8)	.77 (6)	-.10 (7)	-.04 (8)	-.42 (7)	.11 (8)
	lang. usage	.10 (8)	-.42 (8)	.87* (6)	-.07 (7)	-.47 (8)	-.02 (7)	-.01 (8)
	lang. total	.04 (8)	-.35 (8)	.94** (6)	.13 (7)	-.21 (8)	-.13 (7)	-.17 (8)
	maps	-.40 (8)	-.39 (8)	.29 (6)	-.31 (7)	-.65 (8)	.52 (7)	.16 (8)
	graphs	.01 (8)	-.04 (8)	.62 (6)	-.50 (7)	-.21 (8)	.71 (7)	.29 (8)

TABLE 24 (Cont'd)

Educational development	Parent's Attitude toward children	Sibling relationship	Hassles	Family influence other than parents	Peer relationship	Facing difficult situations	Independence (daily routine)
G8 references	-.05 (8)	.26 (8)	.68 (6)	.07 (7)	-.20 (8)	.39 (7)	-.13 (8)
work-st. total	-.14 (8)	-.06 (8)	.65 (6)	-.37 (7)	-.40 (8)	.65 (7)	.15 (8)
arith. concept	-.80* (8)	-.19 (8)	.44 (6)	.15 (7)	-.27 (8)	.66 (7)	-.19 (8)
arith. prob.	-.84** (8)	-.40 (8)	.17 (6)	.16 (7)	-.47 (8)	.55 (7)	-.21 (8)
arith. total	-.85** (8)	-.33 (8)	.28 (6)	.17 (7)	-.40 (8)	.61 (7)	-.21 (8)
composite (ITBS)	-.30 (8)	-.60 (8)	.70 (6)	.03 (7)	-.43 (8)	.34 (7)	-.13 (8)
G 9 soc. concepts	.13 (10)	.07 (9)	.20 (8)	.04 (10)	-.19 (10)	-.19 (9)	-.04 (10)
nat. sci.	.25 (10)	.28 (9)	-.34 (8)	.29 (10)	.29 (10)	-.34 (9)	-.29 (10)
expression	.28 (10)	.27 (9)	.29 (8)	.43 (10)	.08 (10)	-.25 (9)	-.43 (10)
quant.	.28 (10)	.54 (9)	-.28 (8)	.35 (10)	.36 (10)	-.19 (9)	-.35 (10)
reading s.s.	.28 (10)	.14 (9)	-.02 (8)	.20 (10)	-.01 (10)	-.14 (9)	-.20 (10)
reading nat. sci.	.51 (10)	-.09 (9)	-.26 (8)	-.04 (10)	.10 (10)	-.35 (9)	.04 (10)
reading lit.	.40 (10)	-.38 (9)	-.05 (8)	.09 (10)	.12 (10)	-.57 (9)	-.09 (10)
vocabulary	.48 (10)	-.31 (9)	-.09 (8)	.01 (10)	-.09 (10)	-.44 (9)	-.01 (10)

TABLE 24 (Cont'd)

Educational development		Parent's attitude toward children	Sibling relationship	Hassles	Family influence other than parents	Peer relationship	Facing Difficult situation	Independence (daily routine)
G9	composite (ITED)	.43 (10)	.17 (9)	-.13 (8)	.21 (10)	.13 (10)	-.34 (9)	-.21 (10)
	sources	.68 (10)	-.11 (9)	.05 (8)	-.52 (10)	-.07 (10)	-.50 (9)	.52 (10)
G 10	soc. concepts	-.38 (8)	-.41 (8)	.42 (6)	-.32 (7)	-.72* (8)	.47 (7)	.11 (8)
	nat. sci.	.07 (8)	-.33 (8)	.57 (6)	-.13 (7)	-.75* (8)	-.19 (7)	.03 (8)
	expression	-.17 (8)	-.34 (8)	.99* (6)	.18 (7)	-.26 (8)	.06 (7)	-.22 (8)
	quant.	-.58 (8)	.10 (8)	.50 (6)	.19 (7)	-.11 (8)	.85* (7)	-.23 (8)
	reading s.s.	-.21 (8)	-.39 (8)	.59 (6)	-.02 (7)	-.28 (8)	.56 (7)	-.10 (8)
	reading nat. sci.	-.44 (8)	-.57 (8)	.74 (6)	.11 (7)	-.32 (8)	.44 (7)	-.18 (8)
	reading lit.	.13 (8)	-.43 (8)	.64 (6)	.34 (7)	-.01 (8)	.13 (7)	-.35 (8)
	vocabulary	.07 (8)	-.66 (8)	.74 (6)	-.02 (7)	-.30 (8)	.04 (7)	-.10 (8)
	composite (ITED)	-.32 (8)	-.45 (8)	.72 (6)	.11 (7)	-.33 (8)	.49 (7)	-.18 (8)
	sources	-.16 (8)	-.50 (8)	.90* (6)	.09 (7)	-.25 (8)	.21 (7)	-.17 (8)

* $p < .05$

** $p < .01$

D-2-e Correlates of Peer Relationship

Significant correlates of peer relationship found were 2 arithmetic total ($r= -.95$, $df= 2$, $p < .05$), grade 3 mechanics of English ($r=-.84$, $df= 4$, $p < .05$), grade 6 punctuation ($r= -.84$, $df= 5$, $p < .05$), and grade 10 social concepts ($r= -.72$, $df= 6$, $p < .05$) and background in the natural sciences ($r= -.75$, $df= 6$, $p < .05$).

Individuals having good preschool peer relationship tended to show more problems in arithmetic at the second grade, English at grade 3, punctuation at grade 6, and in understanding basic social concepts and general background in the natural sciences at the tenth grade level.

D-2-f Correlates of Facing Difficult Situations

Individuals who received more discouragement from the parents in facing difficult situations during the preschool period tended to have more problems in reading graphs ($r= .76$, $df= 5$, $p < .05$) at the fifth grade and in quantitative thinking ($r= -.85$, $df= 5$, $p < .05$) at the tenth grade level.

D-2-g Correlates of Dependence - Independence

(Daily Routine)

No significant correlation was found between preschool dependence-independence and any of the 116 measures of educational achievement and development.

D-3 The First Grade Personality Attributes as Correlates of Educational Development

Fifteen measures of personality attributes acquired from the subjects when they were enrolled in the first grade, through the administration of the California Test of personality, included self-reliance, personal worth, personal freedom feeling of belonging,

withdrawing tendency, nervous symptoms, personal adjustment, social standards, social skills, anti-social tendency, family relations, school relations, community relations, social adjustment, and total adjustment.

Correlations between each of these 15 personality measures and each of the 106 measures of educational achievement and development are shown in Table 25 (a and b).

D-3-a Correlates of Self-Reliance

Self-reliance at the first grade level was found to be significantly and negatively related to achievement in capitalization at grades 4, 7, and 8; punctuation at grade 8; and using sources of information at grade 10.

The breakdown of the significant correlates with the level of correlation is as follows: grade 4 capitalization ($r = -.48$, $df = 17$, $p < .05$), grade 7 capitalization ($r = -.57$, $df = 14$, $p < .050$), grade 8 capitalization ($r = -.50$, $df = 16$, $p < .05$), punctuation ($r = -.51$, $df = 16$, $p < .05$), and grade 10 sources ($r = -.48$, $df = 18$, $f < .05$).

D-3-b Correlates of Personal Worth

Personal worth at grade 1 was found to be significantly and positively correlated with a large number of measures of educational achievement and development.

TABLE 25 a

Correlations between Personality Attributes Measured at Grade 1 and Educational Development Measured at Grades 1-10
(Figures in Parentheses Indicates number of Cases)

Educational Development		Self-reliance	Personal worth	Personal freedom	Feeling of belonging	Withdrawing tendency	Nervous symptoms	Personal adjustment	Social standards
G1	reading (1-C)	-.23 (19)	.24 (19)	-.12 (19)	.10 (19)	-.42 (19)	.07 (19)	-.04 (19)	-.18 (19)
G3	vocabulary	-.10 (18)	.30 (18)	-.24 (18)	-.02 (18)	-.29 (18)	.03 (18)	-.02 (18)	-.39 (18)
	comprehension	-.19 (18)	.36 (18)	-.15 (18)	.10 (18)	-.22 (18)	.10 (18)	.12 (18)	-.45 (18)
	total reading	-.14 (18)	.35 (18)	-.19 (18)	.04 (18)	-.26 (18)	.06 (18)	.06 (18)	-.43 (18)
	mech. English	-.10 (18)	.22 (18)	-.17 (18)	-.10 (18)	-.27 (18)	-.04 (18)	-.10 (18)	-.37 (18)
	spelling	-.06 (18)	.11 (18)	-.19 (18)	-.10 (18)	-.18 (18)	.13 (18)	-.03 (18)	-.46 (18)
	total language	-.11 (18)	.13 (18)	-.18 (18)	-.10 (18)	-.19 (18)	.12 (18)	-.04 (18)	-.48* (18)
	arith. reason	.01 (18)	.46 (18)	.04 (18)	.22 (18)	-.37 (18)	.08 (18)	.19 (18)	-.16 (18)
	arith. fund.	-.27 (18)	.13 (18)	.00 (18)	.16 (18)	-.09 (18)	.13 (18)	.13 (18)	-.13 (18)
	arith. total	-.06 (18)	.39 (18)	.05 (18)	.23 (18)	-.32 (18)	.11 (18)	.20 (18)	-.16 (18)
	total (CAT)	-.10 (18)	.31 (18)	-.16 (18)	.08 (18)	-.29 (18)	.10 (18)	.06 (18)	-.42 (18)
G4	vocabulary	-.10 (19)	.47 (19)	-.15 (19)	.04 (19)	-.20 (19)	-.00 (19)	.14 (19)	-.35 (19)
	reading	-.28 (19)	.58** (19)	-.28 (19)	.16 (19)	-.22 (19)	-.03 (19)	.12 (19)	-.29 (19)
	spelling	-.22 (19)	.35 (19)	-.31 (19)	.12 (19)	-.29 (19)	.07 (19)	.02 (19)	-.35 (19)

TABLE 25 (cont'd)

Educational Development		Self-reliance	Personal worth	Personal freedom	Feeling of belonging	Withdrawing tendency	Nervous symptoms	Personal adjustment	Social standards
G4	capital.	-.48* (19)	.28 (19)	-.34 (19)	.11 (19)	-.22 (19)	.06 (19)	-.09 (19)	-.46 (19)
	punct.	-.41 (19)	.23 (19)	-.35 (19)	.44 (19)	.02 (19)	.38 (19)	.23 (19)	-.29 (19)
	lang. usage	-.42 (19)	.25 (19)	-.35 (19)	.08 (19)	.22 (19)	.17 (19)	.13 (19)	-.47 (19)
	lang. total	-.42 (19)	.32 (19)	-.40 (19)	.22 (19)	-.09 (19)	.19 (19)	.08 (19)	-.44 (19)
	maps	-.07 (19)	.52* (19)	-.20 (19)	.36 (19)	-.31 (19)	.01 (19)	.22 (19)	-.18 (19)
	graphs	-.11 (19)	.50* (19)	-.28 (19)	.21 (19)	-.32 (19)	-.19 (19)	.05 (19)	.05 (19)
	references	-.13 (19)	.36 (19)	-.27 (19)	.01 (19)	-.21 (19)	-.11 (19)	-.04 (19)	.11 (19)
	work-st. total	-.11 (19)	.53* (19)	-.28 (19)	.23 (19)	-.32 (19)	-.11 (19)	.10 (19)	-.04 (19)
	arith. concept	-.13 (19)	.61** (19)	-.01 (19)	.34 (19)	-.25 (19)	.08 (19)	.25 (19)	-.21 (19)
	arith. prob.	-.11 (19)	.33 (19)	-.20 (19)	.52* (19)	-.03 (19)	.39 (19)	.37 (19)	-.00 (19)
	arith. total	-.27 (19)	.56* (19)	-.25 (19)	.50* (19)	-.17 (19)	.23 (19)	.31 (19)	-.10 (19)
	composite (ITBS)	-.24 (19)	.55* (19)	-.27 (19)	.22 (19)	-.22 (19)	.05 (19)	.16 (19)	-.31 (19)
G5	vocabulary	-.04 (20)	.36 (20)	-.18 (20)	.04 (20)	-.16 (20)	-.03 (20)	.08 (20)	-.40 (20)
	reading	-.15 (20)	.40 (20)	-.43 (20)	.13 (20)	-.24 (20)	-.08 (20)	.03 (20)	-.36 (20)

TABLE 25 a (cont'd)

Educational Development		Self-reliance	Personal worth	Personal freedom	Feeling of Belonging	Withdrawing tendency	Nervous Symptoms	Personal adjustment	Social standards
G5	spelling	-.11 (20)	.08 (20)	-.37 (20)	.07 (20)	-.27 (20)	.03 (20)	-.09 (20)	-.35 (20)
	capit.	-.11 (20)	.47* (20)	-.02 (20)	.36 (20)	-.23 (20)	.09 (20)	.21 (20)	-.33 (20)
	punct.	-.15 (20)	.36 (20)	-.26 (20)	.21 (20)	-.24 (20)	.10 (20)	.06 (20)	-.33 (20)
	lang. usage	-.35 (20)	.61 (20)	-.13 (20)	.26 (20)	-.15 (20)	.18 (20)	.21 (20)	-.42 (20)
	lang. total	-.21 (20)	.41 (20)	-.24 (20)	.27 (20)	-.24 (20)	.12 (20)	.11 (20)	-.38 (20)
	maps	-.37 (20)	.19 (20)	-.22 (20)	.22 (20)	-.15 (20)	.17 (20)	.02 (20)	-.20 (20)
	graphs	-.22 (20)	.40 (20)	-.30 (20)	.22 (20)	-.28 (20)	.05 (20)	.03 (20)	-.03 (20)
	references	-.40 (20)	.52* (20)	-.31 (20)	.03 (20)	-.34 (20)	-.16 (20)	-.06 (20)	-.30 (20)
	work-st. total	-.37 (20)	.44 (20)	-.33 (20)	.20 (20)	-.31 (20)	.03 (20)	-.00 (20)	-.19 (20)
	arith. concept	.02 (20)	.32 (20)	-.04 (20)	-.01 (20)	-.21 (20)	-.15 (20)	.04 (20)	-.11 (20)
	arith. total	-.11 (20)	.39 (20)	-.05 (20)	.10 (20)	-.14 (20)	-.06 (20)	.11 (20)	-.04 (20)
	composite (ITBS)	-.19 (20)	.44 (20)	-.30 (20)	.16 (20)	-.24 (20)	-.01 (20)	.07 (20)	-.34 (20)
G6	vocabulary	-.03 (18)	.60** (18)	-.12 (18)	.21 (18)	-.36 (18)	-.07 (18)	.11 (18)	-.32 (18)

TABLE 25a 'Cont'd)

Educational Development		Self-reliance	Personal Worth	Personal Freedom	Feeling of Belonging	Withdrawing Tendency	Nervous Symptoms	Personal Adjustment	Social Standards
G6	reading	-.10 (18)	.53* (18)	-.24 (18)	.39 (18)	-.18 (18)	.12 (18)	.28 (18)	-.41 (18)
	spelling	-.01 (18)	.24 (18)	-.39 (18)	.21 (18)	-.42 (18)	.01 (18)	-.01 (18)	-.22 (18)
	capital.	-.35 (18)	.46 (18)	-.24 (18)	.47* (18)	-.16 (18)	.11 (18)	.14 (18)	-.16 (18)
	punct.	-.06 (18)	.53* (18)	-.18 (18)	.44 (18)	-.33 (18)	.03 (18)	.17 (18)	-.23 (18)
	lang. usage	-.23 (18)	.75** (18)	-.19 (18)	.32 (18)	-.28 (18)	-.01 (18)	.20 (18)	-.16 (18)
	lang. total	-.18 (18)	.55* (18)	-.28 (18)	.41 (18)	-.34 (18)	.05 (18)	.14 (18)	-.22 (18)
	maps	-.38 (18)	.32 (18)	-.17 (18)	.05 (18)	-.36 (18)	-.08 (18)	-.12 (18)	-.00 (18)
	graphs	.02 (18)	.48* (18)	.02 (18)	.45 (18)	-.21 (18)	.12 (18)	.32 (18)	-.24 (18)
	references	-.37 (18)	.52* (18)	-.24 (18)	.30 (18)	-.32 (18)	.07 (18)	.09 (18)	-.13 (18)
	work-st. total	-.27 (18)	.50* (18)	-.16 (18)	.31 (18)	-.34 (18)	.04 (18)	.11 (18)	-.15 (18)
	arith. concept	,12 (18)	.43 (18)	-.00 (18)	.28 (18)	-.27 (18)	.03 (18)	.17 (18)	-.02 (18)
	arith. prob.	-.11 (18)	.33 (18)	.08 (18)	.03 (18)	-.25 (18)	-.06 (18)	.03 (18)	-.11 (18)
	arith. total	.02 (18)	.45 (18)	.03 (18)	.20 (18)	-.29 (18)	-.01 (18)	.13 (18)	-.07 (18)
	composite (ITBS)	-.13 (18)	.58* (18)	-.19 (18)	.33 (18)	-.33 (18)	.03 (18)	.17 (18)	-.28 (18)

TABLE 35a (Cont'd)

Educational Development		Self-reliance	Personal Worth	Personal Freedom	Feeling of Belonging	Withdrawing Tendency	Nervous Symptoms	Personal Adjustment	Social Standards
G 7	vocabulary	-.05 (16)	.56* (16)	-.33 (16)	.75** (16)	-.22 (16)	.20 (16)	.42 (16)	-.35 (16)
	reading	.12 (16)	.42 (16)	-.39 (16)	.52* (16)	-.27 (16)	.08 (16)	.31 (16)	-.47 (16)
	spelling	-.16 (16)	.34 (16)	-.32 (16)	.26 (16)	-.43 (16)	.13 (16)	.02 (16)	-.27 (16)
	capital.	-.57* (16)	.52* (16)	-.15 (16)	.45 (16)	-.22 (16)	.31 (16)	.19 (16)	.01 (16)
	punct.	-.46 (16)	.68** (16)	-.13 (16)	.37 (16)	-.29 (16)	.09 (16)	.18 (16)	-.24 (16)
	lang. usage	-.27 (16)	.63** (16)	-.21 (16)	.63 (16)	-.18 (16)	.28 (16)	.42 (16)	-.46 (16)
	lang. total	-.38 (16)	.58* (16)	-.23 (16)	.45 (16)	-.31 (16)	.21 (16)	.21 (16)	-.27 (16)
	maps	-.26 (16)	.48 (16)	-.36 (16)	.31 (16)	-.38 (16)	-.07 (16)	.08 (16)	-.28 (16)
	graphs	-.49 (16)	.53* (16)	-.34 (16)	.14 (16)	-.12* (16)	-.03 (16)	.01 (16)	.07 (16)
	references	-.30 (16)	.54* (16)	-.31 (16)	.50* (16)	-.25 (16)	.21 (16)	.24 (16)	-.15 (16)
	work=st. total	-.40 (16)	.60* (16)	-.39 (16)	.38 (16)	-.30 (16)	.05 (16)	.14 (16)	-.16 (16)
	arith. concept	.14 (16)	.27 (16)	-.25 (16)	.42 (16)	-.06 (16)	.17 (16)	.32 (16)	.01 (16)
	arith. prob.	-.04 (16)	.42 (16)	-.15 (16)	.30 (16)	-.30 (16)	-.03 (16)	.14 (16)	-.00 (16)
	arith. total	.01 (16)	.41 (16)	-.23 (16)	.34 (16)	-.26 (16)	.02 (16)	.19 (16)	-.05 (16)
	composite (ITBS)	-.17 (16)	.59* (16)	-.34 (16)	.58* (16)	-.29 (16)	.15 (16)	.31 (16)	-.30 (16)

TABLE 25a (Cont'd)

Educational Development	Self-reliance	Personal Worth	Personal Freedom	Feeling of Belonging	Withdrawing Tendency	Nervous symptoms	Personal Adjustment	Social Standard
G 8 vocabulary	-.09 (18)	.40 (18)	-.21 (18)	.21 (18)	-.25 (18)	.05 (18)	.10 (18)	-.41 (18)
reading	-.11 (18)	.47* (18)	-.26 (18)	.39 (18)	-.24 (18)	.08 (18)	.26 (18)	-.40 (18)
spelling	-.15 (18)	.25 (18)	-.40 (18)	.07 (18)	-.35 (18)	.07 (18)	-.10 (18)	-.37 (18)
capital.	-.50* (18)	.33 (18)	-.24 (18)	.23 (18)	.09 (18)	.41 (18)	.15 (18)	-.27 (18)
punct.	-.51* (18)	.37 (18)	-.08 (18)	-.04 (18)	-.10 (18)	.18 (18)	-.04 (18)	-.26 (18)
lang. usage	-.34 (18)	.26 (18)	-.30 (18)	-.01 (18)	-.08 (18)	.10 (18)	-.08 (18)	-.19 (18)
lang. total	-.41 (18)	.34 (18)	-.29 (18)	.08 (18)	-.13 (18)	.21 (18)	-.02 (18)	-.31 (18)
maps	-.45 (18)	.53* (18)	-.23 (18)	.29 (18)	-.33 (18)	.11 (18)	.09 (18)	-.13 (18)
graphs	-.18 (18)	.25 (18)	-.231 (18)	.29 (18)	-.30 (18)	.05 (18)	-.01 (18)	.19 (18)
references	-.24 (18)	.36 (18)	-.17 (18)	.35 (18)	-.03 (18)	.43 (18)	.34 (18)	-.41 (18)
work-st. total	-.31 (18)	.41 (18)	-.23 (18)	.36 (18)	-.24 (18)	.23 (18)	.16 (18)	-.13 (18)
arith. concept	-.21 (18)	.34 (18)	-.28 (18)	.45 (18)	-.25 (18)	.06 (18)	.21 (18)	-.22 (18)
arith. prob.	-.15 (18)	.47* (18)	.10 (18)	.00 (18)	-.13 (18)	-.25 (18)	.08 (18)	.03 (18)

TABLE 25 a (cont'd)

Educational Development		Self-reliance	Personal worth	Personal freedom	Feeling of belonging	Withdrawing tendency	Nervous Symptoms	Personal adjustment	Social standards
G8	arith. total	-.14 (18)	.47* (18)	-.06 (18)	.20 (18)	-.22 (18)	-.15 (18)	.15 (18)	-.07 (18)
	composite (ITBS)	-.26 (18)	.48* (18)	-.26 (18)	.28 (18)	-.24 (18)	.12 (18)	.15 (18)	-.34 (18)
G9	soc. concepts	-.12 (19)	.10 (19)	-.74** (19)	.19 (19)	-.16 (19)	-.18 (19)	-.13 (19)	-.20 (19)
	nat. sci.	.04 (19)	.19 (19)	-.45 (19)	.04 (19)	-.12 (19)	-.35 (19)	-.16 (19)	-.04 (19)
	expression	-.28 (19)	.19 (19)	-.43 (19)	-.11 (19)	-.06 (19)	-.05 (19)	-.14 (19)	-.25 (19)
	quant.	-.15 (19)	.45 (19)	-.21 (19)	.13 (19)	-.50* (19)	-.18 (19)	-.09 (19)	.08 (19)
	reading s.s.	-.24 (19)	.21 (19)	-.36 (19)	-.18 (19)	-.11 (19)	-.24 (19)	-.19 (19)	-.26 (19)
	reading n.s.	-.03 (19)	.29 (19)	.05 (19)	.22 (19)	.32 (19)	.35 (19)	.40 (19)	.05 (19)
	reading lit.	-.09 (19)	.13 (19)	-.55* (19)	.00 (19)	-.19 (19)	-.19 (19)	-.19 (19)	-.17 (19)
	vocabulary	-.04 (19)	.04 (19)	-.47* (19)	-.12 (19)	-.45 (19)	-.41 (19)	-.39 (19)	-.42 (19)
	composite (ITED)	-.17 (19)	.32 (19)	-.51* (19)	.02 (19)	-.22 (19)	-.25 (19)	-.16 (19)	-.21 (19)
	sources	-.21 (19)	.43 (19)	-.51* (19)	.09 (19)	-.41 (19)	-.32 (19)	-.22 (19)	-.04 (19)
G10	soc. concepts	.13 (20)	.41 (20)	-.38 (20)	.47* (20)	-.08 (20)	.02 (20)	.29 (20)	-.34 (20)
	Nat. Sci.	.08 (20)	.42 (20)	-.03 (20)	.11 (20)	-.51* (20)	-.25 (20)	-.03 (20)	-.50* (20)
	expression	-.35 (20)	.48* (20)	-.31 (20)	.03 (20)	-.27 (20)	-.07 (20)	-.06 (20)	-.31 (20)
	quant.	.04 (20)	.19 (20)	-.28 (20)	.15 (20)	-.19 (20)	-.07 (20)	.04 (20)	.17 (20)

TABLE 25 a (cont'd)

Educational Development		Self-reliance	Personal worth	Personal freedom	Feeling of belonging	Withdrawing tendency	Nervous Symptoms	Personal adjustment	Social standards
G10	reading s.s.	-.34 (20)	.38 (20)	-.41 (20)	.17 (20)	-.12 (20)	.01 (20)	.03 (20)	-.05 (20)
	reading n.s.	-.23 (20)	.60 (20)	-.31 (20)	.30 (20)	-.26 (20)	-.05 (20)	.11 (20)	-.11 (20)
	reading lit.	-.27 (20)	.43 (20)	-.35 (20)	-.04 (20)	-.37 (20)	-.10 (20)	-.13 (20)	-.15 (20)
	vocabulary	-.24 (20)	.41 (20)	-.44 (20)	.20 (20)	-.28 (20)	-.04 (20)	.00 (20)	-.35 (20)
	composite (ITED)	-.16 (20)	.50* (20)	-.41 (20)	.20 (20)	-.33 (20)	-.12 (20)	.01 (20)	-.17 (20)
	sources	-.48* (20)	.52* (20)	-.13 (20)	.00 (20)	-.17 (20)	-.02 (20)	-.04 (20)	.06 (20)

* p .05

** p .01

TABLE 25 b

Educational Development		Social skills	Anti-social tendency	Family relations	School relations	Community relations	Social Adjustment	Total adjustment
G1	reading (L-C)	-.29 (19)	-.05 (19)	-.01 (19)	.05 (19)	.19 (19)	-.03 (19)	-.11 (19)
G3	vocabulary	-.23 (18)	.11 (18)	-.31 (18)	-.19 (18)	-.07 (18)	-.20 (18)	-.21 (18)
	comprehension	-.25 (18)	.13 (18)	-.27 (18)	-.19 (18)	.01 (18)	-.20 (18)	-.15 (18)
	total reading	-.25 (18)	.12 (18)	-.29 (18)	-.19 (18)	-.03 (18)	-.20 (18)	-.18 (18)
	mech. English	-.20 (18)	.10 (18)	-.21 (18)	-.18 (18)	-.02 (18)	-.15 (18)	-.23 (18)
	spelling	-.23 (18)	.02 (18)	-.49* (18)	-.19 (18)	-.22 (18)	-.38 (18)	-.29 (18)
	total lang.	-.24 (18)	.05 (18)	-.45 (18)	-.21 (18)	-.18 (18)	-.35 (18)	-.29 (18)
	arith. reason	-.16 (18)	.17 (18)	-.09 (18)	.09 (18)	.40 (18)	.14 (18)	.10 (18)
	arith. fund.	-.21 (18)	.00 (18)	-.03 (18)	-.20 (18)	.26 (18)	-.06 (18)	-.06 (18)
	arith. total	-.17 (18)	.14 (18)	-.08 (18)	.04 (18)	.42 (18)	.11 (18)	.08 (18)
	total (CAT)	-.21 (18)	.13 (18)	-.35 (18)	-.12 (18)	.01 (18)	-.19 (18)	-.16 (18)
G4	vocabulary	-.26 (19)	.06 (19)	-.26 (19)	-.23 (19)	-.08 (19)	-.20 (19)	-.20 (19)
	reading	-.30 (19)	.15 (19)	-.06 (19)	-.18 (19)	.01 (19)	-.10 (19)	-.14 (19)
	spelling	-.16 (19)	.16 (19)	-.27 (19)	-.03 (19)	-.13 (19)	-.17 (19)	-.23 (19)

TABLE 25b (Cont'd)

Educational Development		Social Skills	Anti-Social Tendency	Family Relations	School Relations	Community Relations	Social Adjustment	Total Adjustment
G4	capital.	-.10 (19)	.12 (19)	-.34 (19)	-.20 (19)	-.23 (19)	-.27 (19)	-.37 (19)
	punct.	-.14 (19)	.08 (19)	.12 (19)	-.17 (19)	-.09 (19)	-.11 (19)	-.07 (19)
	lang. usage	-.31 (19)	.15 (19)	-.16 (19)	-.32 (19)	-.51* (19)	-.42 (19)	-.30 (19)
	lang. total	-.20 (19)	.15 (19)	-.18 (19)	-.20 (19)	-.27 (19)	-.27 (19)	-.27 (19)
	maps	-.10 (19)	.24 (19)	-.13 (19)	.14 (19)	.24 (19)	.10 (19)	.03 (19)
	graphs	-.46* (19)	.10 (19)	-.04 (19)	.01 (19)	.05 (19)	-.08 (19)	-.07 (19)
	references	-.21 (19)	.09 (19)	.06 (19)	-.10 (19)	.18 (19)	.11 (19)	-.04 (19)
	work-st. total	-.28 (19)	.16 (19)	-.06 (19)	.02 (19)	.16 (19)	.04 (19)	-.04 (19)
	arith. concept	.02 (19)	.22 (19)	.08 (19)	.24 (19)	.29 (19)	.24 (19)	.16 (19)
	arith. prob.	-.10 (19)	.29 (19)	.26 (19)	.22 (19)	.29 (19)	.27 (19)	.30 (19)
	arith. total	-.09 (19)	.23 (19)	.15 (19)	.09 (19)	.28 (19)	.19 (19)	.16 (19)
	composite (ITBS)	-.26 (19)	.16 (19)	-.13 (19)	-.12 (19)	-.00 (19)	-.10 (19)	-.13 (19)
G 5	vocabulary	-.22 (20)	.18 (20)	-.24 (20)	-.20 (20)	-.06 (20)	-.17 (20)	-.16 (20)
	reading	-.21 (20)	.04 (20)	-.27 (20)	-.35 (20)	-.26 (20)	-.29 (19)	-.32 (19)
	spelling	-.18 (20)	.18 (20)	-.25 (20)	-.18 (20)	-.30 (20)	-.28 (19)	-.27 (19)

TABLE 25 b (cont'd)

Educational Development		Social skills	Anti-Social tendency	Family relations	School relations	Community relations	Social adjustment	Total adjustment
G5	capital.	-.08 (20)	.17 (20)	.00 (20)	.02 (20)	-.01 (20)	.01 (20)	-.02 (20)
	punct.	.02 (20)	.30 (20)	-.11 (20)	-.06 (20)	-.03 (20)	.01 (20)	-.06 (20)
	lang. usage	-.26 (20)	.24 (20)	-.32 (20)	.04 (20)	-.17 (20)	-.20 (20)	-.12 (20)
	lang. total	-.13 (20)	.27 (20)	-.17 (20)	-.05 (20)	-.13 (20)	-.11 (20)	-.11 (20)
	maps	-.04 (20)	-.13 (20)	.05 (20)	-.11 (20)	-.04 (20)	-.08 (20)	-.16 (20)
	graphs	-.14 (20)	.26 (20)	.09 (20)	.02 (20)	.24 (20)	.16 (20)	.03 (20)
	references	-.36 (20)	-.06 (20)	-.23 (20)	-.29 (20)	-.21 (20)	-.33 (20)	-.36 (20)
	work-st. total	-.21 (20)	.06 (20)	-.03 (20)	-.14 (20)	.02 (20)	-.07 (20)	-.16 (20)
	arith. concept	-.38 (20)	.03 (20)	.05 (20)	-.07 (20)	.05 (20)	-.09 (20)	-.12 (20)
	arith. prob.	-.03 (20)	.09 (20)	.03 (20)	-.17 (20)	.17 (20)	.11 (20)	.05 (20)
	arith. total	-.21 (20)	.07 (20)	.04 (20)	-.13 (20)	.12 (20)	.01 (20)	-.04 (20)
	composite (ITBS)	-.22 (20)	.14 (20)	-.18 (20)	-.21 (20)	-.10 (20)	-.17 (20)	-.20 (20)
G6	vocabulary	-.24 (18)	.14 (18)	-.24 (18)	-.05 (18)	.11 (18)	-.09 (18)	-.10 (18)
	reading	-.10 (18)	.38 (18)	-.15 (18)	-.00 (18)	.05 (18)	-.01 (18)	-.03 (18)

TABLE 25b (Cont'd)

Educational Development	Social Skills	Anti-Social Tendency	Family relations	School Relations	Community Relations	Social Adjustment	Total Adjustment
G6 spelling	-.07 (18)	.15 (18)	-.27 (18)	-.09 (18)	.00 (18)	-.09 (18)	-.14 (18)
capital.	.08 (18)	.25 (18)	.05 (18)	-.02 (18)	.18 (18)	.15 (18)	.04 (18)
punct.	-.14 (18)	.11 (18)	.02 (18)	-.03 (18)	.03 (18)	-.03 (18)	-.02 (18)
lang. usage	-.23 (18)	.16 (18)	-.04 (18)	-.08 (18)	.06 (18)	-.00 (18)	-.00 (18)
lang. total	-.10 (18)	.20 (18)	-.08 (18)	-.06 (18)	.09 (18)	.01 (18)	-.03 (18)
maps	-.23 (18)	-.02 (18)	.09 (18)	-.22 (18)	,25 (18)	.03 (18)	-.13 (18)
graphs	-.36 (18)	.26 (18)	.26 (18)	.18 (18)	.24 (18)	.15 (18)	.18 (18)
references	-.34 (18)	.09 (18)	.01 (18)	-.16 (18)	.07 (18)	-.07 (18)	-.10 (18)
work-st. total	-.35 (18)	.13 (18)	.13 (18)	-.07 (18)	.21 (18)	.04 (18)	-.02 (18)
arith. concept	-.06 (18)	.34 (18)	.21 (18)	.38 (18)	.41 (18)	.37 (18)	.23 (18)
arith. prob.	-.45 (18)	-.01 (18)	.07 (18)	-.01 (18)	.24 (18)	-.07 (18)	-.08 (18)
arith. total	-.25 (18)	.21 (18)	.18 (18)	.23 (18)	.38 (18)	.21 (18)	.11 (18)
composite (ITBS)	-.21 (18)	.24 (18)	-.08 (18)	-.01 (18)	.15 (18)	.01 (18)	-.02 (18)
G 7 vocabulary	.07 (16)	.46 (16)	-.07 (16)	.14 (16)	.06 (16)	.14 (16)	.15 (16)
reading	.01 (16)	.39 (16)	-.21 (16)	.04 (16)	-.07 (16)	-.03 (16)	-.01 (16)

TABLE 25b (Cont'd)

Educational DEvelopment		Social Skills	Anti-Social Tendency	Family Relations	School Relations	Community Relations	Social Adjustment	Total Adjustment
G7	spelling	.13 (16)	.20 (16)	-.30 (16)	-.09 (16)	.17 (16)	.04 (16)	-.11 (16)
	capital.	-.15 (16)	.14 (16)	.03 (16)	-.08 (16)	.41 (16)	.16 (16)	.07 (16)
	punct.	-.25 (16)	.01 (16)	-.12 (16)	-.11 (16)	.12 (16)	-.08 (16)	-.15 (16)
	lang. usage	-.22 (16)	.07 (16)	-.15 (16)	-.03 (16)	-.07 (16)	-.18 (16)	-.07 (16)
	lang. total	-.12 (16)	.12 (16)	-.15 (16)	-.08 (16)	.17 (16)	-.01 (16)	-.07 (16)
	maps	-.21 (16)	.11 (16)	-.10 (16)	-.08 (16)	.20 (16)	-.06 (16)	-.16 (16)
	graphs	-.08 (16)	.20 (16)	-.04 (16)	-.19 (16)	.16 (16)	.11 (16)	.00 (16)
	references	-.06 (16)	.22 (16)	-.04 (16)	-.12 (16)	.15 (16)	.07 (16)	.02 (16)
	work-st. total	-.08 (16)	.20 (16)	-.07 (16)	-.15 (16)	.19 (16)	.04 (16)	-.05 (16)
	arith. concept	.09 (16)	.56* (16)	.25 (16)	.26 (16)	.37 (16)	.43 (16)	.37 (16)
	arith. prob.	-.19 (16)	.43 (16)	.11 (16)	.26 (16)	.30 (16)	.25 (16)	.17 (16)
	arith. total	-.12 (16)	.45 (16)	.11 (16)	.23 (16)	.28 (16)	.25 (16)	.19 (16)
	composite (ITBS)	-.03 (16)	.38 (16)	-.09 (16)	.05 (16)	.16 (16)	.11 (16)	.06 (16)

TABLE 25b (Cont'd)

Educational Development	Social Skills	Anti-Social Tendency	Family Relations	School Relations	Community Relations	Social Adjustment	Total Adjustment
G 8 vocabulary	-.20 (18)	.35 (18)	-.13 (18)	-.02 (18)	-.10 (18)	-.08 (18)	-.12 (18)
reading	-.19 (18)	.29 (18)	-.19 (18)	.01 (18)	.02 (18)	-.07 (18)	-.09 (18)
spelling	.02 (18)	.32 (18)	-.45 (18)	-.10 (18)	-.16 (18)	-.18 (18)	-.24 (18)
capital.	.05 (18)	.39 (18)	-.01 (18)	-.14 (18)	.04 (18)	.06 (18)	.06 (18)
punct.	-.08 (18)	.19 (18)	-.28 (18)	-.22 (18)	-.04 (18)	-.15 (18)	-.16 (18)
lang. usage	-.01 (18)	.21 (18)	-.26 (18)	-.15 (18)	-.23 (18)	-.13 (18)	-.23 (18)
lang. total	.01 (18)	.32 (18)	-.29 (18)	-.16 (18)	-.10 (18)	-.10 (18)	-.15 (18)
maps	-.06 (18)	.13 (18)	-.08 (18)	-.11 (18)	.31 (18)	.11 (18)	-.05 (18)
graphs	.23 (18)	.17 (18)	.15 (18)	.01 (18)	.46 (18)	.39 (18)	.12 (18)
references	.05 (18)	.45 (18)	-.11 (18)	-.00 (18)	.05 (18)	.07 (18)	.11 (18)
work-st. total	.09 (18)	.30 (18)	-.01 (18)	-.03 (18)	.31 (18)	.23 (18)	.08 (18)
arith. concept.	-.23 (18)	.14* (18)	.07 (18)	.11 (18)	.21 (18)	.04 (18)	-.04 (18)
arith. prob.	-.52* (18)	.01 (18)	.14 (18)	-.07 (18)	.10 (18)	-.08 (18)	-.06 (18)
arith. total	-.46 (18)	.06 (18)	.12 (18)	.02 (18)	.18 (18)	-.02 (18)	-.06 (18)

Table 25b (cont'd)

Educational Development		Social Skills	Anti-Social Tendency	Family Relations	School Relations	Community Relations	Social Adjustment	Total Adjustment
G 8	composite (ITBS)	-.15 (18)	.33 (18)	-.14 (18)	-.06 (18)	.04 (18)	-.03 (18)	-.10 (18)
G 9	soc. concepts	-.03 (19)	.06 (19)	.08 (19)	-.40 (19)	-.36 (19)	-.16 (19)	-.31 (19)
	nat. sci.	-.21 (19)	-.04 (19)	.32 (19)	-.30 (19)	-.32 (19)	-.11 (19)	-.23 (19)
	expressions	-.18 (19)	.01 (19)	-.12 (19)	-.51* (19)	-.41 (19)	-.33 (19)	-.33 (19)
	quant.	-.18 (19)	-.05 (19)	.07 (19)	-.08 (19)	.12 (19)	.05 (19)	.12 (19)
	reading s.s.	-.44 (19)	-.05 (19)	-.07 (19)	-.46* (19)	-.41 (19)	-.42 (19)	-.45 (19)
	reading n.s.	.04 (19)	.28 (19)	.23 (19)	-.02 (19)	.06 (19)	.22 (19)	.33 (19)
	reading lit.	-.16 (19)	-.03 (19)	-.06 (19)	-.34 (19)	-.34 (19)	-.25 (19)	-.32 (19)
	vocabulary	-.23 (19)	-.01 (19)	-.24 (19)	-.16 (19)	-.33 (19)	-.36 (19)	-.50* (19)
	composite (ITED)	-.26 (19)	.01 (19)	.01 (19)	-.38 (19)	-.34 (19)	-.26 (19)	-.35 (19)
	sources	-.24 (19)	-.08 (19)	-.00 (19)	-.31 (19)	-.17 (19)	-.19 (19)	-.30 (19)
G 10	soc. concepts	.12 (20)	.27 (20)	-.00 (20)	-.02 (20)	-.09 (20)	.06 (20)	.04 (20)
	sci. sci.	-.27 (20)	-.29 (20)	-.26 (20)	-.11 (20)	-.24 (20)	-.38 (20)	-.40 (20)

Table 25b (Cont'd)

Educational Development	Social Skills	Anti-Social Tendency	Family Relations	School Relations	Community Relations	Social Adjustment	Total Adjustment
G10	-.16 (20)	.05 (20)	.08 (20)	.01 (20)	.09 (20)	.08 (20)	.02 (20)
reading s.s.	-.15 (20)	.27 (20)	.09 (20)	-.21 (20)	-.15 (20)	.01 (20)	-.05 (20)
reading n.s.	-.26 (20)	.16 (20)	.03 (20)	-.03 (20)	-.07 (20)	-.04 (20)	-.07 (20)
reading lit.	-.16 (20)	.07 (20)	-.32 (20)	-.24 (20)	-.10 (20)	-.17 (20)	-.27 (20)
vocabulary	-.11 (20)	.15 (20)	-.16 (20)	-.17 (20)	-.19 (20)	-.15 (20)	-.23 (20)
composite (ITED)	-.20 (20)	.14 (20)	-.06 (20)	-.14 (20)	-.11 (20)	-.08 (20)	-.16 (20)
sources	.05 (20)	.07 (20)	-.09 (20)	-.23 (20)	.08 (20)	.06 (20)	-.00 (20)

*p < .05

**p < .01

Significant correlates of this personality variable were grade 4 reading (r=.58, df=17, p<.01), maps (r=.52, df=17, p<.05), graphs (r=.50, df=17, p<.05), work-study total (r=.53, df=17, p.< .05), arithmetic concept (r=.61, df=17, p< .01), arithmetic total (r=.56, df=17, p<.05), composite score (r=.55, df=17, p<.05); grade 5 capitalization (r=.47,df=18, p< .05), references (r=.52, df=18, p <.05); grade 6 vocabulary (r=.60, df=16, p<.01), reading (r=.53, df=16, p <.05), punctuation (r=.53, df=16, p<.05), language usage (r=.75, df=16, p <.01), language total (r=.55, df=16, p<.05), graphs (r=.48, df=16, p<.05), references (r=.52, df=16, p <.05), work-study total (r=.50, df=16, p<.05), composite score (r=.58, df=16, p<.05); grade 7 vocabulary (r=.56, df=14, p <.05), capitalization (r=.52, df=14, p<.05), punctuation (r=.68, df=14, p<.01), language usage (r=.63, df=14, p<.01), language total (r=.58, df=14, p<.01), graphs (r=.53, df=14, p<.05), references (r=.54, df=14, p<.05), work-study total (r=.60, df=14, p<.05), composite score (r=.59, df=14, p <.05); grade 8 reading (r=.47, df=16, p<.05), maps (r=.53, df=16, p<.05), arithmetic problem (r=.47, df=16, p<.05), arithmetic total (r=.47, df=16, p<.05), composite score (r=.48, df=16, p<.05); and grade 10 expression (r=.48, df=18, p<.05), composite score (r=.50, df=18, p <.05), sources (r=.52, df=18, p <.05).

These findings revealed that higher degree of personal worth shown at grade 1 tended to have significantly positive effect on the overall educational development at grades 4, 6, 7, 8, and 10. Individuals with higher first-grade personal worth

tended also to do better in capitalization and reading references at the fifth grade level.

D-3-c. Correlates of Personal Freedom

The degree of personal freedom, as measured at grade 1, was found to have a significantly negative relation to the ninth-grade overall educational development in general and the ninth-grade achievement in the understanding of basic social concepts, interpretation of literary materials, vocabulary, and using sources of information in particular.

The breakdown of the significant correlates of this personality variable is as follows: grade 9 social concepts ($r=-.74$, $df=17$, $p<.01$), reading literary materials ($r= -.55$, $df=17$, $p<.05$), vocabulary ($r= -.47$, $df=17$, $p<.05$), composite score ($r= -.51$, $df=17$, $p<.05$), and sources ($r=-.51$, $df= 17$, $p<.05$).

D-3-d. Correlates of Feeling of Belonging

Significant correlates of this personality variable found were: grade 4 arithmetic problem ($r= .52$, $df=17$, $p<.05$), arithmetic total ($r= .50$, $df=17$, $p<.05$); grade 6 capitalization ($r=.47$, $df=16$, $p<.05$); grade 7 vocabulary ($r=.75$, $df=14$, $p<.01$), reading ($r= .52$, $df=14$, $p<.05$), references ($r=.50$, $df=14$, $p<.05$), composite score ($r=.58$, $df=14$, $p<.05$); and grade 10 social concepts ($r=.47$, $df=18$, $p<.05$).

The lower the level of feeling of belonging shown at the first grade level the more problems one would have in arithmetic at the fourth grade; capitalization at the sixth grade;

overall academic areas as well as vocabulary, reading, using references at the seventh grade; and the understanding of basic social concepts at the tenth grade.

D-3-e. Correlates of Withdrawing Tendency

It was found that the higher the withdrawing tendency shown at grade 1 the more problems one would have in the development of quantitative thinking ($r= -.50$, $df=17$, $p<.05$) at grade 9 and the general background in the natural sciences ($r= -.51$, $df=18$, $p<.05$), at grade 10.

D-3-f. Correlates of Nervous Symptoms

None of the 106 measures of educational achievement and development correlated significantly with the nervous symptoms measured at the first grade level.

D-3-g. Correlates Personal Adjustment

The measure of personal adjustment is the subtotal of self-confidence, personal worth, personal freedom, feeling of belonging, withdrawing tendency, and nervous symptoms.

This attribute, measured at grade 1, did not correlate significantly with any of the 106 measures of educational achievement and development.

D-3-h. Correlates of Social Standards

Social standards measured at grade 1 showed significantly negative correlations with the achievement in language ($r= -.48$, $df=16$, $p<.05$), at grade 3 and general background in the natural

sciences (r= -.50, df=18, p<.05) at grade 10.

D-3-i.. Correlates of Social Skills

The level of social skills, as measured at grade 1, seemed to have significantly negative effect on the ability to read graphs (r= -.46, df=17, p<.05) at grade 4 and the ability to solve arithmetic problem (r= -.52, df=16, p<.05) at grade 8.

D-3-j. Correlates of Anti-Social Tendency

The only significant correlate of this personality variable found was grade 7 arithmetic concept (r= .56, df=14, p<.05).

D-3-k. Correlates of Family Relations

Family relations, measured at the first grade level, seemed to have a negative effect on the achievement of the seventh-grade arithmetic concept (r= -.49, df=16, p<.05).

D-3-l. Correlates of School Relations

School relations at grade 1 was found to correlate significantly and negatively with the appropriateness of expression (r= -.51, df=17, p<.05) and interpretation of reading materials in social studies (r= -.46, df=17, p<.05) at grade 9.

D-3-m. Correlates of Community Relations

Community relations measured at grade 1 seemed to have a significantly negative effect on the fourth-grade language usage (r= -.51, df=17, p<.05).

D-3-n. Correlates of Social Adjustment

The measure of social adjustment is the subtotal of social standards, social skills, anti-social tendency, family relations, school relations, and community relations.

This personality variable, measured at grade 1, did not correlate significantly with any of the 106 measures of educational achievement and development.

D-3-o. Correlates of Total Adjustment

The total adjustment score is the composite of personal adjustment and social adjustment scores.

The level of total adjustment, as measured at grade 1, seemed to have a significantly negative effect on the achievement of the ninth-grade vocabulary ($r = -.50$, $df = 17$, $p < .05$).

D-4. The First-Grade IQ and Reading Readiness as Determinants of Educational Development

Scholastic aptitude and reading readiness of the subjects, measured by the SRA Intelligence Test and the Lee-Clark Reading Test, at grade 1 were examined in relation to a total of 115 measures of educational achievement and development covering the period from grade 2 through grade 10.

Results of the correlational analyses are summarized in Table 26.

TABLE 26

Correlations between the First Grade I.Q., Reading Readiness and Educational Development Measured at Grades 2-10.

(Figure in Parentheses Indicates Number of Cases)

Educational Development		First Grade	
		I.Q.	Reading Readiness
G 2	vocabulary	.55* (13)	- (0)
	comprehension	.68* (13)	- (0)
	total reading	.62* (13)	- (0)
	mech. English	.41 (13)	- (0)
	spelling	.36 (13)	- (0)
	total language	.45 (13)	- (0)
	arith. reson	.38 (13)	- (0)
	arith. fund.	.24 (13)	- (0)
	arith. total	.22 (13)	- (0)
	total (CAT)	.55* (13)	- (0)
G 3	vocabulary	.69**(31)	.53* (16)
	comprehension	.62**(32)	.52* (16)
	total reading	.67**(31)	.54* (16)
	mech. English	.70**(31)	.53* (16)
	spelling	.45* (31)	.25 (16)
	total lang.	.57**(31)	.36 (16)
	arith. reason.	.65**(31)	.52* (16)
	arith. fund.	.53**(31)	.18 (16)
	arith. total	.67**(31)	.45 (16)

TABLE 26 (cont.)

Educational Development		First Grade	
		I.Q.	Reading Readiness
G3	total (CAT)	.64**(31)	.45 (16)
G 4	Vocabulary	.62**(32)	.44 (17)
	reading	.78**(32)	.59*(17)
	spelling	.63**(32)	.58*(17)
	capitalization	.61**(32)	.43 (17)
	punctuation	.49**(32)	.34 (17)
	lang. usage	.46**(32)	.10 (17)
	lang. total	.64**(32)	.44 (17)
	maps	.58**(32)	.54*(17)
	graphs	.53**(32)	.37 (17)
	references	.62**(32)	.41 (17)
	work-st. total	.65**(32)	.49*(17)
	arith. concept	.57**(32)	.55 (17)
	arith. prob.	.38* (32)	.49*(17)
	arith. total	.52**(32)	.62*(17)
	composite (ITBS)	.74**(32)	.56*(17)
G 5	Vocabulary	.56**(33)	.20 (18)
	reading	.58**(33)	.35 (18)
	spelling	.41* (33)	.43(18)
	capitalization	.41* (33)	.27(18)
	punctuation	.48**(33)	.32(18)

TABLE 26 (cont'd)

Educational Development		First Grade	
		I.Q.	Reading Readiness
G5	lang. usage	.42* (33)	.33 (18)
	lang. total	.54**(33)	.40 (18)
	maps	.55**(33)	.44 (18)
	graphs	.67**(33)	.60* (18)
	references	.66**(33)	.67**(18)
	work-st. total	.71**(33)	.67**(18)
	arith. concept	.58**(33)	.35 (18)
	arith. prob.	.40* (33)	.11 (18)
	arith. total	.57**(33)	.23 (18)
	composite (ITBS)	.65**(33)	.39 (18)
G 6	vocabulary	.51**(31)	.16 (16)
	reading	.57**(31)	.33(16)
	spelling	.49**(31)	.45 (16)
	capitalization	.41* (31)	.10 (16)
	punctuation	.38* (31)	.25 (16)
	lang. usage	.42* (31)	.33 (16)
	lang. total	.50**(31)	.32 (16)
	maps	.60**(31)	.60 (16)
	graphs	.57**(31)	.48 (16)
	references	.65**(31)	.53*(16)

TABLE 26 (cont'd)

Educational Development		First Grade	
		I.Q.	Reading Readiness
G6	work-st. total	.65**(31)	.61* (16)
	arith. concept	.71**(31)	.47 (16)
	arith. prob.	.61**(31)	.46 (16)
	arith. total	.72**(31)	.51* (16)
	composite (ITBS)	.65**(31)	.39 (16)
G 7	vocabulary	.52**(29)	.20 (15)
	reading	.45* (29)	.40 (15)
	spelling	.55**(29)	.57* (15)
	capitalization	.65**(29)	.47 (15)
	punctuation	.65**(29)	.48 (15)
	lang. usage	.40* (29)	.39 (15)
	lang. total	.65**(29)	.54* (15)
	maps	.73**(29)	.78**(15)
	graphs	.41* (29)	.50 (15)
	references	.59**(29)	.37 (15)
	work-st. total	.66**(29)	.67**(15)
	arith. concept	.58**(29)	.51* (15)
	arith. prob.	.56**(29)	.63* (15)
	arith total	.61**(29)	.59* (15)
	composite (ITBS)	.67**(29)	.53* (15)

TABLE 26 (Cont'd)

	Educational Development	First Grade	
		I.Q.	Reading Readiness
G 8	vocabulary	.64**(32)	.33 (17)
	reading	.58**(32)	.44 (17)
	spelling	.40* (32)	.35 (17)
	capitalization	.53**(32)	.32 (17)
	punctuation	.50**(32)	.25 (17)
	lang. usage	.51**(32)	.13 (17)
	lang. total	.55**(32)	.31 (17)
	maps	.66**(32)	.77**(17)
	graphs	.57**(32)	.27 (17)
	references	.62**(32)	.50 (17)
	work-st. total	.69**(32)	.56*(17)
	arith. concept	.57**(32)	.58*(17)
	arith. prob.	.45**(32)	.34 (17)
	arith. total	.55**(32)	.53*(17)
	composite (ITBS)	,70**(32)	.49*(17)
G 9	soc. concept	.38* (31)	.20 (17)
	nat. sci.	.35 (31)	.04 (17)
	expression	.44 * (31)	.22 (17)
	quantitative	.54 **(31)	.56*(17)
	reading soc. st.	.55 **(31)	.19 (17)
	reading nat. sci.	.21 (31)	-.19 (17)

Table 26

Educational Development		First Grade	
		I.Q.	Reading Readiness
G 9	reading lit.	.27 (31)	.03(17)
	vocabulary	.44* (31)	.36(17)
	composite (ITED)	.55**(31)	.24(17)
	sources	.57**(31)	.18(17)
G 10	soc. concept	.25 (33)	.15 (18)
	nat. sci.	.25 (33)	.26 (18)
	expression	.63**(33)	.57*(18)
	quantitative	.49**(33)	.53*(18)
	reading soc. st.	.57**(33)	.35 (18)
	reading nat . sci.	.56**(33)	.37 (18)
	reading lit.	.64**(33)	.45 (18)
	vocabulary	.63**(33)	.46*(18)
	composite(ITED)	.64**(33)	.48*(18)
	Sources	.37* (33)	.50*(18)

* $p < .05$

** $p < .01$

D-4-a Correlates of the First Grade I.Q.

The first grade I.Q. proved to be a very powerful determinant of educational achievement and development throughout the period from grade 2 to grade 10.

As can be seen in Table 26, all but 11 out of 115 measures of educational achievement and development correlated significantly and positively, beyond the .05 level of significane, with the first grade I.Q. These findings revealed that the lower the individual's I.Q. at grade 1 the more difficult would be his problems in the development of overall academic skills during the period from grade 2 through grade 10.

D-4-b Correlates of the First Grade Reading Readiness

Individuals who had lower level of reading readiness at grade 1 appeared to have learning problems in the areas of vocabulary ($r = .53$, $df = 14$, $p < .05$), comprehension ($r = .52$, $df = 14$, $p < .05$), total reading ($r = .54$, $df = 14$, $p < .05$), mechanics of English ($r = .53$, $df = 14$, $p < .05$), and arithmetic reasoning ($r = .52$, $df = 14$, $p < .05$), at grade 3; reading ($r = .59$, $df = 15$, $p < .05$), spelling ($r = .58$, $df = 15$, $p < .05$), reading maps ($r = .54$, $df = 15$, $p < .05$), work-study skills ($r = .49$, $df = 15$, $p < .05$), and arithmetic problem ($r = .49$, $df = 15$, $p < .05$), and overall academic achievement ($r = .56$, $df = 15$, $p < .05$) at grade 4; reading graphs ($r = .60$, $df = 16$, $p < .05$), using references ($r = .67$, $df = 16$, $p < .01$), and total work-study

skills (r=.67, df=16, p<.01) at grade 5; using references (r=.53, df=14, p<.05), total work-study skills (r=.61, df=14, p<.05), and total arithmetic skills (r=.51, df=14, p<.05) at grade 6; spelling (r=.57, df=13, p<.05) language (r=.54, df=13, p<.05), reading maps (r=.78, df=13, p<.01), total work-study skills (r=.67, df=13, p<.01), arithmetic concept (r=.51, df=13, p<.05), arithmetic problem (r=.63, df=13, p<.05), total arithmetic skills (r=.59, df=13, p<.o5), and overall educational achievement (r=.53, df=13, p<.o5) at grade 7; reading maps (r=.77, df=15, p<.01), total work-study skills (r=.56, df=15, p<.05), arithmetic concept (r=.58, df=15, p<.05), total arithmetic skills (r=.53, df=15, p<.05), and overall educational achievement (r=.49, df=15, p<.05) at grade 8; quantitative thinking (r=.56, df=15, p<.05) at grade 9; and expression (r=.57, df=16, p<.05), quantitative thinking (r=.53, df=16, p<.o5), vocabulary (r=.46, df=16, p<.05), overall educational development (r=.48, df=16, p<.05), and using sources of information (r=.50, df=16, p<.05) at grade 10.

CHAPTER IV

SUMMARY, DISCUSSIONS, AND CONCLUSIONS

The purpose of the study was to establish criteria for the identification of preschool children with learning problems.

The IQ score for the group remained normal to slightly above normal over a period of eight years, but the individual scores tended to vary more as the members grew older. Although there was still a significant correlation (.58) between IQ scores in the 1st and 8th grades, it was relatively low, indicating an increase of IQ variance over time. A possible source of the variance may be attributable to fluctuation in mental development among the subject between the two specific points in time. It is possible that the discouragement and lowering of self-confidence and deteriorating social adjustment, which the data indicate were evident as the youngster approached the sixth grade, may have contributed to the variance.

Academic achievement throughout the eight years was compared within each academic area. The group as a whole had an above average achievement in reading and vocabulary throughout the grades. Their achievements in spelling, language, punctuation and capitalization, however, fell below the expected mean from 5th to 8th grade.

Reading readiness was a variable compared with educational achievement. Individuals who had a lower level of reading readiness at first grade appeared to have learning problems in the area of vocabulary, comprehension, total reading, mechanics of English and arithmetic reasoning in third grade. The learning problems extended to overall academic achievement in grades 4, 7, 8, 10.

Most research compares reading readiness and ability with specific

psychological factors. It has been found that minority groups and sub-culture groups are less verbal than middle class children and consequently are poor readers. The subjects in this study were middle class, Mid-West socially and culturally. Therefore, it could be concluded that the reading readiness was related to I.Q., ability, in general rather than being related to psychological factors.

Perhaps attention should be given to other factors when considering reading readiness at first grade level and the academic achievement in later grades. Educators responsible for determining content often fail to consider the child in all his aspects.

The parents are prone to consider the child a physiological organism with biological mechanisms and requirements. In reality he is a psychological being following psychological laws in thought, interpretation, action and interaction. A child is a social being who strives to belong and functions as a member of a group. "His basic needs are fulfilled at any age only if he has a chance to function adequately on all levels - biological, psychological and social." (Dreikurs 1966) Readiness and later learning must acknowledge areas other than mental processes. The mental life must be looked upon as a part of the total personality of the individual and only one element in a movement toward a final goal. It is paramount, therefore, that movement toward readiness and academic achievement is related to things as the child sees them, his goals. If consideration is not given to the child's perception, a possible conflict between the child's goals and reading readiness development and later non-learning could result. If, for example, the socio-psychological needs of a preschooler are not being fulfilled by the family and the school, he will show little enthusiasm for reading readiness instruction either at home or at

school or later academic pursuits.

There is a relationship, then, between the individual's self-concept and his readiness to learn at any stage of his development. Every individual has in his make-up self-attitudes that are important components in his personality. The child's ability to find his place among his peers rests in a large part upon his concept of himself. It can be concluded that a knowledge of the relationship between self-attitudes and other individuals and groups would be advantageous to both parents and teachers. In a study of junior-high school students Hott and Sonstegard (1965) concluded that "probably not nearly enough is being done in school administration in conjunction with counseling and guidance to relate curriculum to attitudinal profiles that reflect self-conceptions." The same conclusion could probably be related to reading readiness.

From 4th to 8th grade, arithmetic concept scores were generally above average for the subject group. There was, however, a below average mean for performance on arithmetic problems during that time span. Problem solving performance decreased and was related significantly to lower self-confidence among underachievers.

The mean level of the subjects as a group on work-study skills indicates that their achievement level was above the expected grade level. The subjects as a group also had above average expected means on use of references, and use of graphs.

On the California Test of Personality there were several shifts by the subjects as a group from first to fourth grades. The sense of personal freedom, anti-social tendencies, family and community relations decreased over time, while withdrawing tendencies and nervous symptoms increased from first to fourth grade.

The underachieving students in reading were compared to their achieving

classmates on personality characteristics. It was found that in the third grade level there was a significant difference between the two groups on the level of discouragement, although there was no other characteristic at that time that differentiated between the achievers and underachievers. By grade 5 the characteristics having to do with sensitive areas and attention spans significantly differentiated between the achievers and underachievers.

The data indicate, therefore, that in the reading area the underachievers showed signs of discouragement. As the subjects progressed up through the grade levels the reading underachiever manifested other symptoms. They became more sensitive about being overweight, having speech problems and participation in peer activity. The shorter attention span together with the above symptoms paralleled a deceleration in subject matter progress. By the time they reached the sixth grade level the underachievers exhibited a less desirable social adjustment and were considerably more sensitive to being overweight or having other problems, such as speech. The frequency of participation in class discussion also decreased.

It is perhaps safe to conclude that discouragement, which appears from the data to become a serious factor as far as academic function is concerned at the third grade level, denotes a questioning by the child of his own personal worth. By the time he reaches the fifth grade he is well on his way to giving up. He may feel, "What is the use, I am not getting anywhere anyway." Consequently, it appears not to be a matter of shortening attention span but a matter of tuning out the teacher. As he strives to be left alone, classroom participation decreases. This is similar to what Torrance (1962) found. He concluded that creativity of children had been destroyed by the time they had reached the fourth grade.

Spelling was another area in the examination of underachievement.

Although evident earlier it was not until the fifth grade that the difference between the spelling achiever and underachiever became significant as it pertained to the level of self-confidence, academic progress and sensitivity to being overweight, and having speech problems. By the time the subjects had reached sixth grade there was a significant difference between the spelling underachiever and achiever in the area of discharge of responsibility and attention needs as well as academic progress in other areas. Those who were underachievers began disturbing in the classroom. This would indicate that the underachievers were beginning to turn from the useful side of life to the useless. Everyone wants to contribute and feel worthwhile. If the individual is unable to find a place in a useful manner he may give up and become disruptive.

The investigators observed that the children who were experiencing success watched the teacher intently. Other children who were less successful, the short attention spanners, tuned the teacher off and engaged in various activities, i.e., talking to each other, munching, day dreaming, or playing with some object. The children who were attentive, watched the teacher to discover the approval clues which kept them informed as to whether their responses were correct and their behavior acceptable.

The 5th grade underachievers, when compared to the achiever on progress in arithmetic made, as could be expected, significantly slower progress in other academic areas as well. This was consistent. Perhaps of more importance, they had significantly keener feelings about being overweight or having speech problems and a shorter attention span was evident. Furthermore, they were more easily discouraged. In the sixth grade, underachievers were significantly lower in self-confidence, and the less satisfactory overall academic progress continued.

Short attention span and sensitivity about weight and speech were a

recurring characteristics of underachievers. Those who were basic skills underachievers at the fifth grade level were significantly more aggressive, and at the sixth grade level had a significantly poorer social adjustment.

In summary, the characteristic that differentiated underachievers was the understandable generalized lack of academic progress rather than underachievement in isolated areas, sensitivity to real or imagined personal deficiencies, and short attention span.

Weinstein (1968-9) related underachievement to length of attention span. She attributed the differences in attention to the age difference in children as they entered first grade. Perhaps, rather than seeking causes for short attention span, an attempt should be made to discover the purpose the child had for not paying attention. The development of a lack of self-confidence and discouragement among the underachievers perhaps indicates increased inferiority feelings. A feeling of not being appreciated because he does not attain the level of accomplishment expected, and becoming convinced he does not have a place among his peer leads to the pursuit of ficticious goals.

There are four ficticious goals, anyone of which a child might select. He might turn to keeping the teacher busy with him by not paying attention and playing helpless. He might become so discouraged as to give up trying and prove how inadequate he is so that he will be left alone. He may turn to conflict with the teacher to defeat her in order to prove that at least in one area he can achieve, being more powerful than adults. He may feel that he is being hurt and set out to hurt other people.

The tenth graders who found mathematics difficult were compared with others at the same grade level. The data indicate that those who experienced the most difficulty in mathematics had a significantly lower level of development in the following: the ability to do quantitative thinking,

the ability to interpret reading material in natural sciences, using sources of information, understanding basic social concept, general background in the natural sciences and general vocabulary. Most revealing perhaps was that the data indicated that the parents of the tenth graders who had difficulty with mathematics had a significantly less favorable attitude toward their children's freedom than did parents of the children who did well in mathematics.

Success in mathematics requires confidence in one's ability to solve problems. The ability to solve problems requires judgement, and judgements stem from experience. An individual without the freedom to explore and experience would not have much to fall back upon as a basis for making judgements. The converse of permitting children freedom to manage, with guidance, their own affairs, is external management and making decisions the children must follow. Rigid directions and the absence of freedom to experience, as a basis for judgement making and problem solving on one's own is also probably paralleled by high parental standards and expectation; expectations the child may feel he cannot attain.

Comparisons were made between tenth graders who considered history, which is a branch of social studies, to be difficult with those who felt they were doing well in this academic area. The tenth graders who found history difficult showed:

1) Greater discrepancy between ideal self and perceived self.
2) Lesser degree of perceived parental acceptance (the larger the score the greater the deviation and thus, the lesser the degree of perceived parent's acceptance) .
3) Greater tendency to become upset or sick, especially when faced with a difficult school problem or situation
4) Lower level of ability to interpret reading materials in the social sciences.

History and social studies require considerably more judgement and risk taking than other academic subjects. There are no formulas and very few, if any, rules to follow. This area of the academic world is not noted for its orderliness. One may have to change one's opinions or approaches depending upon social changes. One must be prepared to think critically, draw inferences from events, draw conclusions from the facts presented and from hypotheses, interpret and test the guesses one makes often in a subjective manner.

Academic areas such as mathematics and spelling in contrast to history and social studies, for example, are more orderly. In spelling, if rules are followed and letters are placed in the proper order, there is no problem with making judgements or interpreting. In mathematics the formulas and rules are reassuring. One does not need to resort to subjective judgements and drawing of inferences from nebulous data.

The discrepancy between the ideal self and the perceived self, and the feeling of not being accepted by the parents, are related. The high standards set by parents and their expectations of fulfillment not only subject their children to undue pressure, but develop among the children a feeling that they are not accepted and appreciated unless they attain the standards set - do something outstanding. Thus, the children have an ideal self based on what the parents expect, and a self which they themselves perceive. Constant concern about what is expected of them as contrasted to what they themselves perceive as the action that should be taken is not conducive to independent thinking with related ability to draw inferences, form conclusions, think critically, and interpret the readings in the social studies. The conflicts that arise under such circumstances would understandably lead to emotional upset and physical illness.

The major area of investigation involved correlating personal and psychological characteristics of the kindergarten children with 116 measures of educational progress between first and tenth grade.

The kindergarten attributes, as delineated by special observers and educational development were investigated. In general, subject matter progress had some influence in the first five grades of school or educational development. Social adjustment, emotional stability, and sense of responsibility in certain areas had little correlation in predicting the pupil's educational progress for those first five years. There was also a low correlation with the amount of attention needed, disruptive behavior, aggressive behavior, encouragement needed, and attention span.

The low correlations of the above factors with underachievement is not in keeping with the findings in other research. The discrepency may be due to the comparatively small number of subjects for which data were available or other factors.

General attitude, that is, a feeling of having a place among his peers and being assured of it, and a feeling of personal worth and appreciation, was the only variable that continued to correlate consistently with the child's educational development and overall academic accomplishment throughout his first nine years of school. The poorer the individual's general attitude at the kindergarten level the less likely would he be to achieve satisfactory academic progress. The data indicated that the individuals who underachieved in certain academic areas were more easily discouraged, had lower levels of feelings of responsibility, rarely showed self-confidence, showed poor subject matter progress, were overly dependent upon others, and were more or less noncooperative at the kindergarten level.

There was a fairly high correlation between academic achievement and the child's attitude toward sensitive areas such as overweight, speech

problem, etc. and cooperativeness up to and through the second grade.

The behavior delineated by the special observers at the kindergarten level bore no relationship to the achievement of these kindergarten subjects when they reached the tenth grade.

Data provided from interviews with parents indicated that parent's attitude toward the preschool children, however, did have an interesting effect.

Parent's attitude toward their children during the formative period of preschool had a decided effect on the children's development in the area of arithmetic. Children whose parents had very positive attitudes, that is, were rigid in discipline and ideas (matters of conduct should be decided by the parents, a child should be taught to obey an adult unquestioningly, a child's play things are not his to do with as he pleases) had difficulty with arithmetic in elementary grades. The parallelism of elementary and secondary with regard to parent attitude and their children's achievement is revealing. The less favorable attitude toward freedom for the children affected achievement beyond elementary school. At the tenth grade level the children of parents with significantly less favorable attitudes toward children's freedom had more problem in quantitative thinking than children of parents who looked with more favor upon freedom for children. The children who had problems with quantitative thinking (mathematics) had also received from their parents more discouragement in facing difficulty situations. It would appear that lack of opportunity to learn to face difficult problems in everyday living and to learn to manage one's own affairs prevents a child from developing a confidence that he has the ability to solve problems. Questioning one's ability to solve problems appears to be confined to the quantitative thinking area.

The pre-school characteristics as given by parents and the academic growth as measured by standardized instruments in grades one to ten were correlated.

The most influential variable measured here was that of the frequency of hassles encountered between parent and child. The children whose parents did not involve themselves in the handling of the children's hassles during the pre-school period seemed to have more difficulty in the development of verbal skills (vocabulary, comprehension, spelling, reading, language, usage, etc.) at grades 2, 3, 4, 5, 6, 7, & 8).

An observation of this particular variable in the Child Guidance Center and Family Education Center seem to indicate just the opposite. That is, when parents are taught to allow children to work out the conflicts and find solutions to problems such as home work, for example, not only did conflicts decrease but children began to apply themselves academically. However, it is found that what parents say they do with regard to hassles and what they actually do are two different things. It is possible the problem of semantics affected this variable unduly.

Personal worth at first grade level was found to be a powerful correlate of educational progress. "A pupil possesses a sense of being worthy when he feels he is well regarded by others, when he feels that others have faith in his future success, and when he believes that he has average or better than average ability. To feel worthy means to feel capable and reasonably attractive." (Thorne, Clark & Tiegs, 1963). The data reveal that the extent to which the kindergarten and first graders were made to feel worthy was the extent to which it had a significantly positive impact on their overall academic progress in grades four to ten.

A sense of personal freedom proved to be a significant variable. "A pupil enjoys a sense of freedom when he is permitted to have a reasonable share in the determination of his conduct and in setting the general policies that shall govern his life. Desirable freedom includes permission to choose one's own friends and to have at least a little spending money." (Thorne, Clark, Tiegs, 1963). It was not until the ninth grade that the degree of personal freedom as measured at the first grade had a significant relationship to overall academic progress in general and achievement in understanding of basic social concepts, interpretation of literary materials, vocabulary, and using sources of information specifically. Although it may be evident earlier, rebellion against the lack of personal freedom and its negative relationship to school work does not become significant until the pupil approaches high school age. Lack of personal freedom may mean undue pressure from standards and high expectations of the parents. Perhaps by the time the pupil reaches high school he is convinced he will not be able to attain the standards set for him.

As with many of the other components related to self concept and the factors involved in the individuals life style, a feeling of not belonging in the first grade does not have a full impact until late in his school career.

A pupil feels that he belongs when he enjoys the love of his family, the well-wishes of good friends, and a cordial relationship with people in general. Such a pupil will as a rule get along well with teachers and usually feels proud of his school. The lower the level of feeling of belonging experienced in the first years of school the more problems the child will have with certain phases of educational programs up through grade six. At the seventh grade level he will experience problems in the overall academic areas with an extension to problems

of understanding basic social concepts at the tenth grade.

Of all the correlations with the factors of educational development, the first grade IQ scores were more highly and consistently significant. Other research has not found such high and consistent correlations. Edwards (1964) found only a .50 correlation between IQ scores and achievement. The index of forecasting achievement was only 13%. Scott (1965) reported that school success cannot be predicted from mental tests alone. Apparently in the particular school system the subjects attended, teachers were fairly careful to see that those children with highest IQ's were given many opportunities to achieve and learn.

This particular school provides more opportunity for development of creativity and self control as contrasted to autocratic external control. Since IQ generally reflects adaptation to the culture it might be assumed that the children with high IQ's had the kind of background adaptation made possible by the parents that resulted in high IQ and therefore an assumed academic success. The children with lower IQ and therefore less assurance of optimum academic success were, by contrast, without such opportunity -- opportunity for an environment which is encouraging rather than discouraging, fostering a feeling of personal worth, personal freedom and belonging.

On the basis of the data analyzed in this study, it appears valid to conclude that the following factors could serve to identify pre-school children who are likely to become underachievers:

1. Indications of discouragement due to over-protection by parents in preventing the child from the opportunity to come to grips with difficult situations.
2. Evidence of the child questioning his own personal worth.

3. Sensitivity to real or imagined personal short-comings.
4. Slowness in becoming ready to read.
5. Unfavorable attitude of parents toward children's freedom.
6. Sensing or perceiving parental lack of acceptance and perceiving parental high standards and expectations.
7. Discrepancy between ideal-self and perceived-self.
8. Undue parental pressure.
9. Uninspiring general attitude.
10. Over dependence on others.
11. Lack of cooperativeness.
12. Low level of self-confidence.
13. Inadequate initial academic progress.
14. Inadequate attention and application to task at hand.

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APPENDIX A

A FRAME - OF - REFERENCE FOR INTERVIEW

Explain the purpose of the interview and the importance of the study as a means of collecting data that is much needed.

Although the interview is recorded no one will have access to the tape except authorized personnel. After the needed data is obtained the tapes will be destroyed.

It is to be regretted that we must hurry along in the interview but that is to save time for you as well as for me.

I. Warm up

A. 1. Is_____the first of your children to start in the Kindergarten?
2. Other children? Ages?

B. In a few words--How would you describe_____?

C. What would you like_____to be like when he (she) grows up?

II. Social Interpersonal Relationships

A. What is child's relationship to siblings?

1. Position in sibling sequence
   a. Ratio of male to female

2. Conflict?
   a. Rivalry?
   b. Teasing?
   c. Jealousy?

3. Submission?
   a. Sulking?

B. Are there any undue environmental influences?

1. Relatives?
   a. Grandparents?
   b. Other relatives?

2. Other people living in the house?

C. What is the nature of the child's social relationship?

1. Making friends
   a. Neighborhood children
   b. Adults
   c. Animals

2. Does he have pets?
   a. Tell how he cares for them.

D. Preparation for school and attitude?

E. Attitudes toward difficulties?

F. What impressions have been conveyed to him because of family situation?

1. Tragedy
   a. Deaths, diseases, etc.

2. Who dominates family?

3. What type of discipline is used? Who disciplines?
   a. Nagging
   b. Pampering
   c. Strict

4. Kind of supervision?

III. What is the nature of the daily routine?

A. How does child get up in the morning?
   1. Who awakens him?
   2. What about dressing?
   3. What about breakfast?

B. What happens after that?
   1. Where does _____play?

C. Describe the lunch hour

D. What does the child do in the P.M.?

E. Tell about dinner

F. How does the child get off to bed?
   1. What time?
   2. Who puts child to bed?

G. Tell what happens when family goes out together?
   1. Preparation for going out
   2. Leaving the house
   3. What happens when away?

IV. Questions to obtain indications of:

A. Established attitudes such as:
   1. Isolation
   2. Ambitions
   3. Strivings
   4. Passivity
   5. Aggressiveness
   6. Preference for certain people

B. Early recollections and dreams
   1. What are recurring dreams?

      a. Falling, getting left, animals, etc.

C. Loss of self-confidence and resulting discouraged behavior
   1. In what way is child discouraged?
      a. To what does he respond?
   2. What has caused discouragement?

D. Are there any signals of inferiority feelings
   1. Expressions of extensive discouragement
      a. Open expression of inability
      b. Overrating success
      c. Submissiveness

V. What interests are there for the child's future?

A. What is he going to be when he grows up?
B. What is occupation of other members of family?

VI. Complaints of Difficulty

A. What are some difficulties you have with the child?

   1. Under what conditions did complaint arise?
      a. Change of environment
      b. Birth of sibling
      c. Death
      d. Divorce

B. What do you do about difficulty?
   1. Relate in detail the action taken
      a. Clarify - what do you mean by that?

C. Is there any way in which the child stands out?
   1. Hostile attitude toward life
   2. Trend to exclude people
   3. Trying to get out of difficulty
   4. Traits of egotism
   5. Possible causes for inferiority feelings

D. In what other way is the child difficult?
   1. Striving for preeminence
   2. Effect of defiance

VII. In what way is child successful?
A. Conditions under which he functions adequately?

VIII. The enumeration of life difficulties

A. Deformities
   1. Awkardness
   2. Ugliness
   3. Bow-leggedness
B. Handsomeness
C. Defects
   1. Speech
   2. Hearing
D. Handedness

APPENDIX B

NAME OF TESTS:	GRADE:
1. Lee-Clark Reading Readiness Test	1
2. SRA Mental Abilities	1
3. Metropolitan Readiness Tests	1
4. California Readiness Test	1
5. California Personality Test	1
6. California Achievement Tests	2
7. California Achievement Tests	3
8. California Test of Mental Maturity	3
9. Durrell-Sullivan Reading Achievement Test (Form A)	4
10. Durrell-Sullivan Reading Achievement Test (Form B)	4
11. California Test of Personality (Form AA) Elementary	4
12. Iowa Test of Basic Skills (Form 4)	4
13. Durell-Sullivan Reading Achievement Test	5
14. Henmon-Nelson Test of Mental Ability	5
15. Sequential Tests of Educational Progress	5
16. Iowa Silent Reading Tests - Elementary Test	5
17. Iowa Test of Basic Skills	5
18. Iowa Test of Basic Skills	6
19. Otis Quick-Scoring Mental Ability Tests	6
20. Iowa Test of Basic Skills (Form 3)	7
21. Iowa Test of Basic Skills (Form 4)	8
22. The Kuhlmann-Anderson Tests	8
23. Iowa Tests of Educational Development	9
24. Iowa Tests of Educational Development	10

APPENDIX C

P P A S

SCORING INSTRUCTIONS

PERCEIVED PARENT ATTITUDE SCALE

The score obtained is only a relative deviation scale; the scores are not exact right or wrong scores. A small deviation score on the post test indicates the trend that the student perceives his parents as accepting him more.

Count the total number of deviations from the desired pole (1 or 5) as indicated by the key. Add Yes and No deviation 1-22 and 23-36 to give a total deviation score for 1-36, indicating how the student feels his parents accept him.

PERCEIVED PARENT ATTITUDE SCALE - KEY -- PPAS

Yes (1)-----Desired Answer	-----No (5)
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
Yes Deviation	No Deviation

Count the number of positions removed from the desirable response, (1 or 5).

PERCEIVED PARENT ATTITUDE SCALE - KEY--PPAS

Yes (1)-----Desired Answer-----No (5)	
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36

Yes Deviation	No Deviation

NAME:_____

PARENT'S ATTITUDE SCALE

STUDENT DIRECTIONS:

Children have certain feelings about their parents. Last year we asked some children in another school how they felt about their parents. They told some of the ways they felt which have been placed in the following check list. We would like to know if this is how it is with you and your parents.

Now, look at the sample below while I read how we will do it.

SAMPLE

1	2	3
Always yes or	Usually yes or	Sometimes yes, and Sometimes no or
This is the way it always is with my parents.	This is the way it usually is with my parents.	This is sometimes the way it is and sometimes it is not this way with my parents.

4	5
Usually no or It is hardly ever this way with my parents.	Always no or It is never this way with my parents.

Read each statement and then put an (X) on the number that tells how it is with you and your parents, like this:

1 2 3 4 X 6 (1.) My parents want me to have losts of friends.

PARENT'S ATTITUDE SCALE

Yes . . . No

1 2 3 4 5 (1.) No matter what happens, I know that I can always turn to my parents for help.

1 2 3 4 5 (2.) My parents are nice to me most of the time, even when I do wrong.

1 2 3 4 5 (3.) Sometimes if I make a mistake my parents say that can happen to anyone.

1 2 3 4 5 (4.) My parents often tell the neighbors when I've done something wrong.

1 2 3 4 5 (5.) I know my parents love me.

1 2 3 4 5 (6.) My parents always tell me that something bad will happen to me if I don't behave.

1 2 3 4 5 (7.) My parents just don't care about what happens to me.

1 2 3 4 5 (8.) My parents punish me even if I didn't do something wrong.

1 2 3 4 5 (9.) Everytime I make a mistake my parents get angry and yell at me.

1 2 3 4 5 (10.) I'm always scolded when I don't pick up my toys.

1 2 3 4 5 (11.) I can't tell my parents anything.

1 2 3 4 5 (12.) My parents act as if I were in their way.

1 2 3 4 5 (13.) When I have something to say, my parents listen.

1 2 3 4 5 (14.) My parents are interested in me.

1 2 3 4 5 (15.) My parents never punish me for something I didn't do.

1 2 3 4 5 (16.) When I'm sick my parents are very worried and try their best to make me well.

1 2 3 4 5 (17.) Sometimes my parents punish me more than I deserve to be.

1 2 3 4 5 (18.) I can tell my parents about the things I do and they seem to understand.

1 2 3 4 5 (19.) I'm afraid my parents will stop loving me if I get bad marks.

Yes . . .No

WHEN YOU FINISH THIS PAGE PLEASE TURN OVER TO THE NEXT PAGE

PARENT'S ATTITUDE SCALE

Yes . . . No

1 2 3 4 5 (20.) If I did more, my parents would like me better.

1 2 3 4 5 (21.) No matter how I do things, I know my parents like me.

1 2 3 4 5 (22.) My parents want me to be somebody important when I grow up.

1 2 3 4 5 (23.) Sometimes I feel like doing something bad just to see if my parents will still love me.

1 2 3 4 5 (24.) My parents don't push me into things.

1 2 3 4 5 (25.) My parents have already decided what I'm going to be.

1 2 3 4 5 (26.) As long as I do my best my parents are satisfied even if other children can do things lots better.

1 2 3 4 5 (27.) My parents give me special treats to get me to do things better.

1 2 3 4 5 (28.) Somehow I know that no matter what happens, my parents will always love me.

1 2 3 4 5 (29.) As long as I do my best my parents are satisfied.

1 2 3 4 5 (30.) My parents always nag me to do things better.

1 2 3 4 5 (31.) My parents are nicest to me when I am good in school.

1 2 3 4 5 (32.) My parents feel that I am important, not what I do.

1 2 3 4 5 (33.) My parents understand other kids better than me.

1 2 3 4 5 (34.) My parents like to have me show off in front of company.

1 2 3 4 5 (35.) My parents never listen to what I have to say.

1 2 3 4 5 (36.) My parents like me as I am.

Yes . . . No

APPENDIX D

NAME:_____

FAMILISM SCALE

Below is a list of issues concerning the family in general, not your own. Please read all statements very carefully and respond to all of them on the basis of your own true beliefs without consulting any other persons. Do this by reading each statement and then writing, in the space provided at its left, only one of the following numbers: 0, 1, 2, 3, 4. The meaning of each of these figures is:

0: Strongly Disagree
1: Disagree
2: Undecided
3: Agree
4: Strongly Agree

____1. A person should always support his uncles and aunts if they are in need.

____2. Children below 18 should give almost all their earnings to their parents.

____3. The family should consult close relatives (uncles, aunts, first cousins) concerning its important decisions.

____4. Children below 18 should almost always obey their older brothers and sisters.

____5. A person should always consider the needs of his family as a whole more important than his own.

____6. At least one married child should be expected to live in the parental home.

____7. A person should always be expected to defend his family against outsiders even at the expense of his own personal safety.

____8. The family should have the right to control the behavior of each of its members completely.

____9. A person should always support his parents-in-law if they are in need.

____10. A person should always avoid every action of which his family disapproves.

____11. A person should always share his home with his uncles, aunts or first cousins if they are in need.

____12. A person should always be completely loyal to his family.

____13. The members of a family should be expected to hold the same political, ethical and religious beliefs.

____14. Children below 18 should always obey their parents.

____15. A person should always help his parents with the support of his younger brothers and sisters if necessary.

____16. A person should always share his home with his parents-in-law if they are in need.

APPENDIX E

NAME:_____

THE FAMILY SCALE

READ EACH ITEM CAREFULLY AND UNDERLINE QUICKLY THE PHRASE WHICH BEST EXPRESSES YOUR FEELING ABOUT THE STATEMENT. Whenever possible, let your own personal experience determine your answer. Do not spend much time on any item. If in doubt, underline the phrase which seems most nearly to express your present feeling about the statement. WORK RAPIDLY. Be sure to answer every item.

1. Home is the most pleasant place in the world.

   Strongly agree Agree Undecided Disagree Stongly disagree

2. Parents expect too much from their children.

   Strongly agree Agree Undecided Disagree Strongly disagree

3. One ought to discuss important plans with the members of his family.

   Strongly agree Agree Undecided Disagree Strongly disagree

4. In making plans for the future, parents should be given first consideration.

   Strongly agree Agree Undecided Disagree Strongly disagree

5. A man should be willing to sacrifice anything for his family.

   Strongly agree Agree Undecided Disagree Strongly disagree

6. Parents too often expect their grown-up children to obey them.

   Strongly agree Agree Undecided Disagree Strongly disagree

7. One cannot find as much understanding at home as elsewhere.

   Strongly agree Agree Undecided Disagree Strongly disagree

8. One owes his greatest obligation to his family.

   Strongly agree Agree Undecided Disagree Strongly disagree

9. It is hard to keep a pleasant disposition at home.

   Strongly agree Agree Undecided Disagree Strongly disagree

10. People in the family can be trusted completely.

    Strongly agree Agree Undecided Disagree Strongly disagree

11. One becomes nervous at home.

    Strongly agree Agree Undecided Disagree Strongly disagree

12. The joys of family life are much over-rated.

    Strongly agree Agree Undecided Disagree Strongly disagree

13. One's parents usually treat him fairly and sensibly.

Strongly agree Agree Undecided Disagree Strongly disagree

14. One should confide more fully in members of his family.

Strongly agree Agree Undecided Disagree Strongly disagree

15. One feels most contented at home.

Strongly agree Agree Undecided Disagree Strongly disagree

16. Family ties are strenghtened when times are hard.

Strongly agree Agree Undecided Disagree Strongly disagree

17. Parents are inclined to be too old-fashioned in their ideas.

Strongly agree Agree Undecided Disagree Strongly disagree

18. Members of the family are too curious about one's personal affairs.

Strongly agree Agree Undecided Disagree Strongly disagree

19. Parents keep faith in their children even though they cannot find work.

Strongly agree Agree Undecided Disagree Strongly disagree

20. Parents are too particular about the kind of company one keeps.

Strongly agree Agree Undecided Disagree Strongly disagree

21. Obligations to one's family are a great handicap to a young man today.

Strongly agree Agree Undecided Disagree Strongly disagree

22. So far as ideas are concerned, parents and children live in different worlds.

Strongly agree Agree Undecided Disagree Strongly disagree

APPENDIX F

THE SPECIALISTS RATING SCALE

The subjects' behaviors rated by a group of specialists (two psychologists, one psychiatrist, and one classroom teacher), during the period when they were enrolled in kindergarten, were quantified according to the following three-point scales.

1. Social Adjustment

    1. Needs improvement
    2. Adequate
    3. Very good

2. Emotional stability

    1. Needs improvement
    2. Adequate
    3. Very good

3. Discouragement

    1. Easily discouraged
    2. Occasionally discouraged
    3. Not easily discouraged

4. Responsibility

    1. Rarely carries out responsibilities
    2. Usually carries out responsibilities
    3. Always carries out responsibilities

5. Self-confidence

    1. Rarely shows self-confidence
    2. Usually shows self-confidence
    3. Always shows self-confidence

6. Subject-matter progress

    1. Below average
    2. Average
    3. Above average

7. Participation in class discussion

    1. Rarely participates
    2. Usually participates
    3. Always participates

8. General attitude

    1. Poor
    2. Satisfactory
    3. Good

9. Independence

    1. Dependent upon others
    2. Some dependence
    3. Independent of others

10. Sensitive areas - Overweight, speech problems, etc.

    1. No sensitive areas
    2. Some sensitive areas
    3. A lot of sensitive areas

11. Amount of attention needed

    1. Very little
    2. Some
    3. A lot

12. Amount of class discipline

    1. Rarely disrupts
    2. Occasionally
    3. A lot

13. Aggressiveness

    1. Rarely aggressive
    2. Occasionally aggressive
    3. Usually aggressive

14. Shyness

    1. Rarely shy
    2. Occasionally shy
    3. Usually shy

15. Amount of encouragement needed

    1. Little
    2. Some
    3. A lot

16. Cooperativeness

    1. Noncooperative
    2. Usually cooperative
    3. Always cooperative

17. Attention span

    1. Short
    2. Average
    3. Wide